

# Challenges and potential solutions for cultural heritage adaptive reuse

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# Challenges and potential solutions for cultural heritage adaptive reuse

A COMPARATIVE STUDY EMPLOYING THE HISTORIC URBAN LANDSCAPE APPROACH

Nadia Pintossi

# Challenges and potential solutions for cultural heritage adaptive reuse

A comparative study employing the  
Historic Urban Landscape approach

PROEFSCHRIFT

ter verkrijging van de graad van doctor aan de Technische Universiteit  
Eindhoven, op gezag van de rector magnificus prof.dr.ir. F.P.T. Baaijens,  
voor een commissie aangewezen door het College voor Promoties,  
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door

Nadia Pintossi

geboren te Bergamo, Italië

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prof.dr. L. Fusco Girard (University of Naples Federico II)

*Het onderzoek of ontwerp dat in dit wordt beschreven is uitgevoerd in overeenstemming met de TU/e Gedragscode Wetenschapsbeoefening.*



To my families

Nadia Pintossi

*Challenges and potential solutions for cultural heritage adaptive reuse.  
A comparative study employing the Historic Urban Landscape approach.*

Eindhoven University of Technology, 2022

The research described in this thesis was performed within the Chair of Architectural History and Theory of the department of the Built Environment of the Eindhoven University of Technology, the Netherlands, in collaboration with the UNESCO Chair on Heritage and Values: Heritage and the Reshaping of Urban Conservation for Sustainability of the Faculty of Architecture and the Built Environment of the Delft University of Technology, the Netherlands.

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## Summary

### **Challenges and potential solutions for cultural heritage adaptive reuse. A comparative study employing the Historic Urban Landscape approach.**

The liveability of human settlements is threatened by global challenges such as climate change, unprecedented urbanisation, and resource scarcity. At the same time, cities can play a key role in promoting sustainable development and circular economy—a new paradigm for sustainability that promotes self-organizing system capacity towards a comprehensive better productivity closing loops as in natural economy. In this broader context, cultural heritage is considered a resource driving and enabling local sustainable development. To actuate this potential for sustainable development, heritage needs to be conserved. To conserve heritage, adaptive reuse has proven to be a strategy. Adaptive reuse changes a disused or underused item to make it (effectively) used for a different or similar purpose (Department of Environment and Heritage, 2004; Plevoets & Van Cleempoel, 2019). The adaptive reuse of cultural heritage presents environmental, cultural, social, and economic benefits for sustainable development. Moreover, it can contribute to circular economy and cities by prolonging the heritage lifespan. Yet, many challenges hamper and hinder the adaptive reuse of cultural heritage.

A variety of case studies investigating the challenges to adaptive reuse are reported in the scientific literature. Some of these case studies focus specifically on the reuse of cultural heritage. However, further knowledge is needed on the challenges to the adaptive reuse of cultural heritage as the literature review presented in Chapter 1 demonstrates. This literature review identified opportunities to expand this knowledge by i) focusing specifically on the reuse of cultural heritage, acknowledging the heritage specificity, i.e. dealing with heritage significance; ii) engaging a wide variety of stakeholders, reflecting the multi-stakeholder nature of heritage reuse; iii) considering European case studies without focusing on a specific heritage typology; and iv) adopting a landscape approach with a multiscale perspective, acknowledging that heritage is advised to be

## Summary

considered within the context, thus considering various scales. These insights from the literature review guided the definition of the aim and methodology for the present doctoral research. This research expands the knowledge on the challenges to the adaptive reuse of cultural heritage and, contextually, identifies potential solutions.

The challenges to the adaptive reuse of cultural heritage have been identified by organizing roundtable discussions held during a series of stakeholder engagement workshops. Each workshop was held in one of the cities investigated, i.e. the cities of Amsterdam in The Netherlands, Rijeka in Croatia, and Salerno in Italy. These three case studies represent diverse socio-cultural-economic-political contexts within the European region. The participants in the workshops were representatives of the local public, private, knowledge and non-governmental/civic sectors. They were invited to the workshops because of their experience with the adaptive reuse of the cultural heritage, heritage conservation, circular cities, and sustainable urban development. In the identification of challenges to the cultural heritage adaptive reuse, participants were supported by a framework based on the six HUL steps with a multi-scale perspective. Thus, they considered both the site and the urban scale, along with general insights. Contextually to this identification, participants suggested and identified solutions to overcome such challenges.

This research revealed a broad spectrum of challenges to the adaptive reuse of cultural heritage. Therefore, the data collection based on a multiscale-landscape-stakeholder approach enabled the identification of a broad spectrum of challenges. Chapters 2 to 4 report the challenges identified in each case study in detail. Some of these challenges are relevant to the site or the urban level, while some are considered general issues. These findings expand the range of challenges reported in the literature by identifying issues concerning *inter alia* knowledge production, implementation of participation, and cooperation among stakeholders. Notably, some of the challenges identified in the case studies had already been reported in the literature. Yet, these challenges were less frequently mentioned and/or more generally formulated than in the literature. These findings also show that some challenges are not specific to the adaptive reuse of cultural heritage. Moreover, some challenges are interconnected, e.g. by causal relations. Additionally, some challenges occur at multiple scales, suggesting the possibility of intervening at multiple levels in addressing them. Finally, the findings may



be applicable in places similar to the three case studies analysed. Chapters 2 to 4, therefore, contribute to identifying and providing evidence about what factors represent challenges to the adaptive reuse of cultural heritage in the three case studies investigated.

Chapters 2 to 4 also report solutions to address the challenges identified by the stakeholders in each case study. Solutions encompass policy-making, strategies, actions, and tools which contribute to facilitating/enabling the adaptive reuse of cultural heritage or creating a favourable environment for it. Some solutions i) can address multiple challenges; ii) were based on transferable knowledge drawn from examples of heritage reuse belonging to other contexts; and iii) are not specific to the adaptive reuse of the cultural heritage. Solutions were suggested by the participants during the workshops; thus, they reflect their perspectives. Some of the solutions should therefore be tested, and their feasibility and usefulness verified within the case study. However, this dissertation presents a repository to inspire stakeholders implementing the adaptive reuse of cultural heritage and these solutions might also be transferable to other contexts. Chapters 2 to 4, therefore, contribute to enabling the adoption and implementation of the adaptive reuse of cultural heritage by offering ways to overcome the challenges identified.

Chapter 5 presents the findings derived from the comparative study that determined the challenges common to the three case studies analysed. These 14 challenges might be representative of the European region since they are identified in three European cities diverse in terms of scale and socio-cultural-economic-political contexts. Examples of these challenges are lack of awareness and capacity; cultural heritage interpretation and management; data management; costs; conflicting interests; lack of knowledge; lack of participatory processes; and compliance with regulatory, policy, and legislative documents. Some of these challenges might be cross-regional since they were also identified in literature reporting case studies from Asia, North America, and Oceania. Furthermore, some of the common challenges identified relate to some SDGs. Therefore, addressing these challenges could contribute to the efforts to achieve these goals. Notably, the synthesis derived by this comparative study provides a more general insight into the challenges to the adaptive reuse of cultural heritage. This insight contributes to developing a framework for these challenges and it can inform multiple governmental levels of policy-making. Therefore, this synthesis can

enhance the understanding of the adaptive reuse of cultural heritage and its adoption and implementation.

Finally, Chapter 6 concludes the doctoral research by providing overarching conclusions and recommendations for further research. This dissertation contributes to advancing the knowledge on the adaptive reuse of cultural heritage by mapping multi-scale challenges and solutions and drawing a general insight from the common challenges. Particularly, this knowledge can contribute to enabling the adoption and implementation of heritage reuse and, to a certain extent, to achieving some of the SDGs. This doctoral research presents three main limitations that future research could address. The first limitation lies in the static nature of the study resulting in an overview of challenges and solutions within a specific time frame. The second limitation stems from the variety of stakeholders involved in this research: citizens remain to be engaged. The third limitation concerns the transferability and generalizability of the findings because of the case study nature of the research. This dissertation also provides evidence of the need for further research to deepen the understanding of the adaptive reuse of cultural heritage, particularly its challenges. Three main research lines are identified. A first research line could expand the range of stakeholders involved and increase the number of sites investigated to refine the mapping of challenges and identification of solutions within each case study. A second research line could identify the origin of the challenges, how they change, their interdependencies, their hierarchy, and if they are specific to some categories of stakeholders to deepen the knowledge about them. A third research line would expand the comparative study to further develop the theoretical framework on the challenges to the adaptive reuse of cultural heritage. This expansion could broaden the geographical base of the comparative study, include the temporal dimension, and determine how contextual factors influence the framework. Particularly, the first two research lines could inform and contribute to the third.

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## Chapter 1

### Introduction

This thesis is based on a collection of papers and articles that were previously published and presented. Therefore, each chapter has its own introduction and methodology. This chapter introduces the research context and the outline of the thesis by presenting the theoretical framework, the problem statement, the state-of-the-art, the research methodology, and the research significance.

## 1.1 Research background

In the so-called “Urban Century” (Bandarin & van Oers, 2012b), global challenges threaten urban liveability so as the unmanaged or poorly managed growth of cities (Pereira Roders, 2013; United Nations, Department of Economic and Social Affairs, Population Division, 2014). Urban settlements are exposed to the consequences of climate change (Papageorgiou et al., 2021). Urbanization proceeding at an unprecedented pace is an additional pressure factor for urban liveability (UNESCO, 2011b): the number of humans living in cities is projected to grow from 55% in 2018 up to 68% by 2050 (UNDESA, 2018). Under the current trends, the global urban area may almost triple by 2030 (Seto et al., 2012). Unsustainable development results in the gentrification of cities, loss of resilience, lack of inclusiveness, and exposure to globalized economy stresses and pandemics (Fusco Girard, 2013; Pereira Roders, 2013). Furthermore, cities account for the consumption of about 75% of global natural resources (Prendeville et al., 2018; United Nations Environment Programme, 2017). They generate around 75% of greenhouse emissions (Byström, 2018; United Nations Environment Programme, 2017) and about 50% of the global waste (Climate-KIC and C40 Cities, 2018). Therefore, urban environments are drivers of some of these global challenges. Yet, they are also settings where solutions are being conceived and implemented (Fusco Girard & Nocca, 2019; Gravagnuolo et al., 2021; United Nations General Assembly, 2015; United Nations Human Settlements Programme (UN-Habitat), 2016a). “As the world continues to urbanize, sustainable development challenges will be increasingly concentrated in cities and this is where we need to find new solutions” (Fusco Girard & Nocca, 2019, p. 12).

To address the above-mentioned challenges, the paradigms of sustainability and sustainable development have been proposed. “Sustainable development” means a “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”, as defined in the so-called Brundtland Report (*Report of the World Commission on Environment and Development: Our Common Future*, 1987). After the 2007-2008 global financial crisis, there has been a shift in the focus of sustainable development. The financial crisis has impacted urban sustainability planning, especially, the pre-crisis equating sustainability with the enhancement of economic growth (Flint &

Raco, 2012). As a result of this crisis, the prosperity shrank contributing to the drop in welfare of states, the reduction of private investments, and the increase in conflicts, e.g. due to the rise of social inequity. In this scenario, Fusco Girard argues that the focus of sustainable development shifted from growth management to regenerating “economic wealth (...) through new circuits of value creation” to ease the conflicts and enhance liveability in urban settlements (Fusco Girard, 2013, p. 4329).

The key role of cities in sustainable development (UNESCO, 2011b) is witnessed by their inclusion in the eleventh of the 17 goals of the UN 2030 Agenda for Sustainable Development: “Make cities and human settlements inclusive, safe, resilient and sustainable” (United Nations General Assembly, 2015). Specifically, this goal is achievable also by strengthening the protection and safeguard of heritage, as mentioned in the target 11.4 (United Nations General Assembly, 2015). Specifically, there is an ongoing shift towards some cities playing a leading role in driving the sustainable transition (Bandarin, 2019; Papageorgiou et al., 2021). Within this trend, “city managers (including policy-makers, urban planners, mayors) can be leveraged and enabled to lead on urban sustainability issues and to tackle climate change at the city-level” (Prendeville et al., 2018).

As a possible contributor to sustainable development and to create new circuits of value, circular economy is gaining attention and is being further examined by scholars and adopted in development agendas. Although consensus is still lacking on its definition (Kirchherr et al., 2017; Vanhuysse et al., 2021), circular economy is understood as a new paradigm for sustainability that promotes self-organizing system capacity towards a comprehensive better productivity by closing loops as in natural economy (Ellen MacArthur Foundation, 2015; Foster, 2020; Geissdoerfer et al., 2017). Particularly, circular economy includes production-consumption processes that extend the lifespan and reduce both the consumption and waste of products and materials (Foster & Kreinin, 2020), therefore minimizing environmental impacts and waste production, while “creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations” (Kirchherr et al., 2017, p. 225). The potential of circular economy exceeds the flow streams of waste, material, energy, and water flows by “embedding the concept of a self-sufficient/self-regenerative city/city-region and efficiency in multiple dimensions, that is implemented through the development of

cooperation/ collaboration/ synergies between different sectors and territorial actors” (Gravagnuolo et al., 2021). To pursue sustainable development, circular economy is implemented within cities (Girard & Nocca, 2018). This implementation of circular economy in cities characterizes the concept of “circular cities”.

The circular city represents “the spatial/territorial aspects of circular economy” (Fusco Girard, 2019, p. 245; Gravagnuolo et al., 2019). However, a general definition is missing (Girard & Nocca, 2018; Paiho et al., 2020). “(...) A circular city is a city that practices CE principles to close resource loops, in partnership with the city’s stakeholders (citizens, community, business and knowledge stakeholders), to realize its vision of a future-proof city” (Prendeville et al., 2018, p. 188) also by the enabling of technology (Ellen MacArthur Foundation, 2017; Sukhdev et al., 2018). Within this context, Fusco Girard argues that the human-centred adaptive reuse of cultural heritage can be the entry point for implementing the circular economy in cities (Fusco Girard, 2019). Cities–self-defining themselves as circular cities–are in the early stages of implementing circular economy and they implement it in varying ways (Girard & Nocca, 2018; Gravagnuolo et al., 2019; Paiho et al., 2020; Prendeville et al., 2018). Along with these cities, also cities without a circular strategy are implementing or hosting initiatives based on circular economy (Paiho et al., 2020). The implementation of circular economy within cities is considered a promising pathway towards sustainable urban development (Papageorgiou et al., 2021; Sánchez Levoso et al., 2020) as “a circular city seeks to generate prosperity, increase liveability, and improve resilience for the city and its citizens (...)” (Ellen MacArthur Foundation, 2017, p. 7). Yet, more research is needed about the benefits of the implementation of circular economy in cities to advert to overlook potential trade-offs and rebound effects (Papageorgiou et al., 2021). For example, social benefits, such as fostering employment, are often indicated in reports on circular cities and their strategies while are seldom treated in literature. Notwithstanding the need for further investigating circular cities, it is suggested that the implementation of circular economy in human settlements can likely contribute to tackling some of the current global challenges to a certain extent, e.g. climate change (Gravagnuolo et al., 2021; Williams, 2021). Thus, cities can be the “nexus of sustainability transitions” (Loorbach & Shiroyama, 2016; Papageorgiou et al., 2021, p. 1).

Particularly, within cities, the built environment is a key sector to act on to address the threats posed by climate change, resource scarcity, and rapid urbanization. Firstly, the built environment consumes about half of the materials extracted every year (Ellen MacArthur Foundation, 2019). Secondly, it is responsible for nearly 40% of energy-related carbon dioxide (CO<sub>2</sub>) emissions (UN Environment and International Energy Agency, 2017). Thirdly, buildings and construction activities account for 36% of global final energy use worldwide (UN Environment and International Energy Agency, 2017). Similarly, within the European Union, the built environment is responsible for about 40% of the EU energy consumption and more than 35% of greenhouse gas emissions from energy (Ellen MacArthur Foundation, 2019; European Commission, 2019; UN Environment and International Energy Agency, 2017). Therefore, the European Union (EU) pays also attention to the building stock in the policy initiative known as European Green Deal (EGD) (European Commission, 2019). This policy set the aim for a climate-neutral EU by 2050. To fulfil the aim of the EGD, the Renovation Wave Strategy (European Commission, 2020) was launched. This strategy pursues higher resource and energy efficiency by renovating the existing buildings. Within this effort to improve the sustainability of the built environment “adapting instead of demolishing when possible (Bullen & Love, 2010), is an essential ingredient to change the building industry towards a more sustainable future and conserve valuable resources for the time ahead” (Glumac & Islam, 2020, p. 1).

In this broader context, cultural heritage is considered a resource–non-renewable (Pereira Roders, 2019; Shipley et al., 2006)–for local sustainable development (Angrisano et al., 2016; Bandarin & van Oers, 2014; Fusco Girard, 2013; Guzmán et al., 2017; Pereira Roders & Oers, 2014; UNESCO, 2011b; Lo Veldpaus & Pereira Roders, 2014). Due to its worldwide recognition, coined by intergovernmental organizations, cultural heritage is receiving attention as a driver and enabler for sustainable development (*Davos Declaration 2018*, 2018; Guzmán et al., 2017; UNESCO, 2013; United Nations (Habitat III), 2017) and as key to ensure urban liveability (Berg, 2017; United Nations General Assembly, 2015). Particularly, while conserving heritage (Plevoets & Cleempoel, 2011), its adaptive reuse can effectively contribute to the sustainable development of urban areas (UNESCO, 2011b; Yung & Chan, 2012) and circular economy and cities (Fusco Girard, 2019; Gravagnuolo et al., 2021).

### 1.1.1 Cultural heritage

Cultural heritage is a complex construct with an evolving, non-unique definition. Cultural heritage consists of non-renewable resources inherited from past generations that express people's values, knowledge, and traditions, including all aspects of the environment (Council of Europe, 2005). Over time, the concept broadened from "monument"—object-based, top-down, static, and prescriptive—to "cultural heritage"—process-based, also bottom-up, dynamic, and an expression of values and "social choice" (Akagawa, 2018; Bandarin, 2019; Smith, 2012; Tweed & Sutherland, 2007; van Oers, 2015; Vecco, 2010). There was a shift towards including the broader context and geographical setting such as cultural landscapes and living cities and their values up to acknowledge the inseparable and intertwined character of cultural heritage and natural heritage (Labadi et al., 2021; Pereira Roders, 2019; Turner, 2013). For example, the Historic Urban Landscape is an "urban area understood as the result of a historic layering of cultural and natural values and attributes" (UNESCO, 2011b, p. 3). The broadening of the concept of cultural heritage also witnessed the recognition of the intangible dimension of heritage. Consequently, the range of categories of heritage also expanded (Pereira Roders, 2019; Vecco, 2010). In sum, cultural heritage is about plurality, people, meanings, and values, and it is dynamic; therefore, it can entail conflicts, contestation, and contradiction as well as change (Pereira Roders, 2019; Smith, 2012). For these reasons, the term "cultural heritage" is used in this thesis instead of "built heritage". This terminology choice avoids limiting the investigation to narrower possible definitions of built heritage that disregard its intangible dimension *inter alia* (Tweed & Sutherland, 2007).

Reflecting the expansion of the concept of cultural heritage, heritage management shifted toward being understood as a "management of change" (Bandarin, 2019; UNESCO, 2011b) and opened up to a wider variety of stakeholders and disciplines (C. Landorf, 2019), and recognized a plurality of heritage practices and approaches (Australia ICOMOS, 2013; ICOMOS, 1994; Vecco, 2010). Yet, the degree of evolution and innovation differs from the international to the local level and around the world (Pereira Roders, 2019). Firstly, there is an ongoing attempt to reconcile the artificial dichotomy between conservation—all actions retaining the heritage significance by caring for the heritage (Australia ICOMOS, 2013;

Labadi et al., 2021; Lin, n.d.)—and (sustainable) development (Bandarin, 2019). More and more, cultural heritage is being recognized as a driver and enabler of sustainable development, when negative impacts, such as gentrification, are averted (Bandarin, 2019; ICOMOS, 2014; UNESCO, 2011b). Secondly, heritage management is more and more understood as the “management of change” instead of a “freezing” of heritage in a moment in time (Bandarin, 2019; UNESCO, 2011b). Thirdly, there is an ongoing recognition of the plurality and diversity of heritage practices and approaches besides the authorized discourses (Australia ICOMOS, 2013; ICOMOS, 1994; Vecco, 2010). Fourthly, heritage-related practices and interpretation have been opening up to a wider variety of stakeholders and disciplines (Pereira Roders, 2019; Rosetti et al., 2022). Fifthly, “heritage planning and urban conservation can no longer be handled in isolation” (Pereira Roders, 2019, p. 24). Thus, the role of conservation has shifted from preservation toward “being part of a broader strategy for urban regeneration and sustainability,” demanding broad participation and interdisciplinarity (Bullen & Love, 2011b, p. 411). Hence, conserving both tangible and intangible heritage plays a role in sustainable development (CHCfE Consortium, 2015b; Council of Europe, 2014; Chris Landorf, 2009; Yung & Chan, 2012).

The reflections on the role of heritage in sustainable development and the evolution of heritage conservation are comprised in the 2011 UNESCO Recommendation on the Historic Urban Landscape (HUL) (Bandarin, 2019). The Recommendation sets forward the HUL approach to integrating conservation within urban management. It proposes an additional approach for heritage conservation along with existing guidelines and policies (Bandarin, 2019; Ginzarly et al., 2019). Particularly, the Recommendation acknowledges the results of the ongoing debate on conservation and collates “complementary principles, concepts, approaches, and scopes that were already addressed separately and adopted in previous European and international recommendations and charters” (Ginzarly et al., 2019, p. 1000; Turner, 2013).

Three aspects characterized the HUL approach: it is holistic, integrated, and value-based. First, the HUL approach is holistic since it considers the multiple layers, aspects, and interacting scales of the landscape (Rey-Pérez & Pereira Roders, 2020; Loes Veldpaus, 2015). Second, it is an integrated approach since it entails an interdisciplinary approach, encouraging collaboration across disciplines (Bandarin & van Oers, 2012b; Ginzarly et

al., 2019; Turner, 2013). Third, the HUL approach is value-based since it advocates for participation, such as civic engagement, in identifying the multiple values and heritage significance justifying the conservation (Avrami et al., 2000; Ginzarly et al., 2019; Tarrafa Silva & Perieira Roders, 2012).

The Recommendation proposes four categories of tools to implement the HUL approach at the local level. Namely, knowledge and planning tools, civic engagement tools, financial tools, and regulatory systems (UNESCO, 2011b). Along with the tools, a six-step action plan for the implementation of the HUL approach was identified (UNESCO, 2011a). Although these steps (HUL steps) were excluded from the final version of the Recommendation, they are presented in 'The HUL Guidebook' (WHITRAP; City of Ballarat, 2016) and are widely used in practice (Pereira Roders & Bandarin, 2019). The six critical steps to implement the HUL approach include:

**Table 1.1.** The six critical steps to implement the HUL approach.

Short name	HUL step description <sup>1</sup>
Mapping	Surveying comprehensively and mapping natural, cultural, and human resources
Consensus	Reaching a consensus on what values and related attributes to protect
Vulnerability	Assessing the vulnerability of the identified values and related attributes to change, development, socioeconomic pressures and impacts of climate change
Integrate	Integrating values, related attributes, and their vulnerability in the urban development framework
Prioritize or prioritization	Prioritizing actions for conservation and development
Partnership	Establishing partnerships and local management frameworks for each of the actions identified

<sup>1</sup> Adapted from Gravagnuolo & Girard (2017), Veldpaus (2015), and WHITRAP & City of Ballarat (2016).

The UNESCO Recommendation on the Historic Urban Landscape considers urban heritage as an asset for humanity (UNESCO, 2011b). Europe Commission also believes in cultural heritage potential as a driver for sustainable development (UNESCO, 2013) and a "multiplier" through which investment can have a positive impact beyond that initially intended" (CHCfE Consortium, 2015a, p. 16) because "it is an



irreplaceable repository of knowledge and a valuable resource for economic growth, employment and social cohesion” (European Commission, 2014). Yet, something must be done to ensure that this potential can be expressed, with positive effects on stimulating sustainable growth, improving welfare, inducing job opportunities, promoting inclusion, supporting cultural diversity, enhancing the liveability of urban areas, reducing soil consumption, preventing the creation of the waste associated with demolitions, and the often-higher energy consumption involved in the construction of a new building as opposed to refurbishing an existing one (Bullen & Love, 2011b; Labadi et al., 2021; Mohamed et al., 2017). In order to harness this potential, heritage needs to be conserved—understanding the term “conservation” as the broad “realm of cultural heritage preservation, from academic inquiry and historical research to policy-making to planning to technical intervention” to heritage management (Avrami et al., 2000, p. 3).

Adaptive reuse is an acknowledged strategy to conserve cultural heritage (Bullen & Love, 2011b; Plevoets & Van Cleempoel, 2019).

### 1.1.2 Adaptive reuse

Adaptive reuse can be defined as “a process that changes a disused or ineffective item into a new item that can be used for a different [or similar] purpose” (Department of Environment and Heritage, 2004, p. 3; Plevoets & Van Cleempoel, 2019). By prolonging the useful life, adaptive reuse is a strategy to conserve cultural heritage (Langston et al., 2013; Plevoets & Cleempoel, 2011). Over time, the reuse of buildings has evolved from a spontaneous and user-led practice into a specialized and professional one (Plevoets & Van Cleempoel, 2019).

Adaptive reuse encompasses a wide variety of types of buildings and sites, new uses accommodated, and approaches to reuse heritage resources (Glumac & Islam, 2020; Plevoets & Van Cleempoel, 2019). First, adaptive reuse encompasses a wide spectrum of buildings, sites, infrastructures, and land, either recognized as heritage or not (Aigwi et al., 2018; Glumac & Islam, 2020; Kotval-K et al., 2017; Mohamed et al., 2017). For example, reuse for housing has taken place in former churches (Lynch, 2016), monasteries (Olivadese et al., 2017), industrial heritage (Olivadese et al., 2017; Petković-Grozdanić et al., 2016; Plevoets & Sowińska-Heim, 2018; Simonato Citron, 2021), and office buildings (Remøy & Van Der

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Voordt, 2014). Second, when adaptive reuse occurs across use, it entails a wide variety of new uses. For example, industrial heritage has been reused for housing (Olivadese et al., 2017; Petković-Grozdanovića et al., 2016; Plevoets & Sowińska-Heim, 2018; Simonato Citron, 2021), museums (Prat Forga & Cànoves Valiente, 2017; Vardopoulos, 2019; Zang et al., 2020), education (J. Chen et al., 2016) among others. Third, the adaptive reuse of cultural heritage encompasses various approaches in terms of initiators, programme role, and timeframe. Concerning the initiators, formal and top-down processes of adaptive reuse coexist with bottom-up initiatives (Plevoets & Sowińska-Heim, 2018). Concerning the role of the programme, it can be at the starting point of the process of adaptive reuse or be identified later in the process (Plevoets & Van Cleempoel, 2019). In other words, either the function and programme are defined and a suitable accommodation is to be found (Elrod & Fortenberry, 2017a) or they are determined for the heritage to be reused. Concerning the timeframes, adaptive reuse can also be on a temporary basis (Plevoets & Van Cleempoel, 2019; Saleh, 2022). In the literature, adaptive reuse is often addressed from a design perspective (Douglas, 2006; Langston & Shen, 2007) and a decision-making perspective (Glumac & Islam, 2020; Damla Mısırlısoy & Günce, 2016; Oppio et al., 2017). Numerous studies investigate adaptive reuse by referring to specific building typologies (Bullen, 2007; Günçe & Mısırlısoy, 2019; Heath, 2001; Macmillen & Pinch, 2018; Mehr et al., 2017; Pustějovský, 2016; Yildirim & Turan, 2012). While other studies focus on a specific new function and describe the related interventions of adaptive reuse (Haymond, 1982; Popelová, 2016).

The adaptive reuse of cultural heritage is an interdisciplinary multi-stakeholder process. It draws from disciplines such as "architecture, conservation, interior design, landscape design, planning, and engineering" (Plevoets & Van Cleempoel, 2019, p. 7). Therefore, adaptive reuse entails an interdisciplinary process. Furthermore, the direct and indirect stakeholders of the adaptive reuse of cultural heritage are various, also reflecting its multidisciplinary nature. Mısırlısoy and Günce (2016) determined four categories of stakeholders for projects of adaptive reuse: users, producers, investors, and regulators. Although these categories were proposed when identifying the stakeholders that can affect or have a role as decision-makers in the definition of the new uses, these stakeholders play a role also beyond this decision-making. Users encompass both the original users and the contextual users (Damla

Mısırlısoy & Günce, 2016). The formers are users of the previous function of the heritage resource to be reused. The latter category encompasses the stakeholders of the district, e.g. citizens, who can also be prospective users of the reused heritage. Particularly, since the adaptive reuse of cultural heritage deals with heritage resources, civic engagement is advocated to promote sustainable heritage management (Chris Landorf, 2009; UNESCO, 2011b). Producers are stakeholders involved in the preparation, design, and execution of the reuse project. They can include architects, designers, engineers, and heritage experts (Damla Mısırlısoy & Günce, 2016). The investor category includes private owners, developers, companies, public governments, and NGOs depending on the project (Damla Mısırlısoy & Günce, 2016). Finally, regulators represent authorities that both decide regulations relevant to the adaptive reuse as well as that approve and control the reuse projects and their implementation (Damla Mısırlısoy & Günce, 2016). Notably, the degree and phase of involvement of the stakeholders vary in each project (Damla Mısırlısoy & Günce, 2016). Similarly, the stakeholders represent specific goals, interests, and responsibilities that might depend on the heritage reused.

The adaptive reuse of cultural heritage is a complex process (Foster, 2020; Glumac & Islam, 2020; Hong & Chen, 2017) entailing four phases: i) initiation, ii) planning and design, iii) construction, and iv) operation and maintenance (Fusco Girard, 2019; Geraedts & Wamelink, 2009; Martani, 2015). First, the adaptive reuse of cultural heritage deals with the values and attributes of the heritage. Second, it entails complex decision-making to determine the uses for the reused heritage. Particularly, Aigwi and co-workers (2020) identified five priority aspects to be evaluated for such determination, i.e. economic sustainability, built-heritage preservation, socio-cultural aspects, building usability and regulatory aspects. Third, it deals with the potential for transformation of the heritage building or site. Fourth, it entails a wide variety of stakeholders and their different interests. Finally, the heritage is to be considered within its context and not in isolation, considering various scales since the adaptation is also influenced by factors at the site, district, urban, and regional scales, such as the location, development plans, and the presence of public spaces (Grecchi, 2022; Damla Mısırlısoy & Günce, 2016). Therefore, to deal with this complexity, an integrated and holistic approach is beneficial for the adaptive reuse of cultural heritage because it considered the layering of

the heritage and its context, within the (sustainable) development, and the plurality of disciplines and stakeholders involved in such a process.

Whilst its complexity, adaptive reuse is considered an essential aspect of urban regeneration which can also promote sustainable urban development (Aigwi et al., 2020; Plevoets & Van Cleempoel, 2019). Over time, culture and heritage have been used as catalysts of urban regeneration worldwide (Giliberto & Labadi, 2021; Licciardi & Amirtahmasebi, 2012; Plevoets & Van Cleempoel, 2019). "Regeneration is implemented not only through the restoration and reuse of historical buildings but also through the preservation and reactivation of intangible aspects, such as traditions, craftsmanship, or local narratives, and through the restoration and upgrading of the natural landscape" (Plevoets & Van Cleempoel, 2019, p. 56).

#### 1.1.2.1 Adaptive reuse of cultural heritage and sustainable development

Heritage adaptive reuse "conserves and enhances resources" (Bandarin & van Oers, 2012a, p. 131) in all the four dimensions of sustainable development: environmental, cultural, economic, and social (Tam & Hao, 2019). Therefore, the adaptive reuse of cultural heritage can contribute to sustainable development (Douglas, 2006; Mohamed et al., 2017; Wilkinson, 2014b).

Environmental contributions from adaptive reuse are, for example, the extension of cultural heritage lifespan that conserves the embodied energy (Foster, 2020; Yung & Chan, 2012). Furthermore, reusing heritage reduces material demand, transport-related pollution, and demolition-waste production compared to demolition and new contraction (Bullen & Love, 2011c; Strumiłło, 2016; Yung & Chan, 2012). Additionally, the environmental benefits of adaptive reuse can also lie in conserving buildings that are responsive to the local climate thanks to their internal layout and constructive technology (Hong & Chen, 2017) or upgrading the building performance (Grecchi, 2022; Yung & Chan, 2012). Nevertheless, at times, heritage has poor energy efficiency performances which are not addressed by the reuse (Bullen & Love, 2011b). Adaptive reuse can also contribute to reducing or avoiding urban sprawl and favouring transit-oriented development (Bluestone, 2012; Bullen & Love, 2009; Langston et al., 2008).

Concerning the cultural dimension of sustainable development, adaptive reuse can allow to retain attributes and values of cultural heritage (Bullen & Love, 2011b; Langston et al., 2008), as well as maintain or contribute to the place identity (Elsorady, 2014).

Furthermore, the adaptive reuse of cultural heritage presents economic benefits by often lowering the costs compared to a redevelopment of the area because demolishing and constructing costs are avoided, and borrowing costs are reduced due to a shorter building site duration (Bullen & Love, 2011c; Langston et al., 2008). However, in some cases, adaptive reuse costs are higher than the ones for a new building (Shipley et al., 2006) or reuse that does not achieve “sustainability standards” (Sheila Conejos et al., 2016, p. 507; Ellison et al., 2007). Additional economic impacts can be associated with the adaptive reuse of cultural heritage such as the increase in tourism and the rise in the market value of properties in the proximity (Kee, 2019; Strumiłło, 2016; Yung & Chan, 2012).

Furthermore, adaptive reuse can revitalize an area and reduce the availability of vacant properties, which can contribute to reducing risks of vandalism, perception of the area as unsafe, and crime (Kondo et al., 2016; Langston et al., 2008; Remøy & Van Der Voordt, 2014), since vacancy is frequently correlated with increased crime (Anderson & Minor, 2017). This exemplifies how cultural heritage adaptive reuse is likely to contribute to the social dimension of sustainable development. An additional example of this contribution is the raising of living standards in some cases due to the revitalisation and investments associated (Langston et al., 2008). Yet, some adaptive reuse projects—both top-down and bottom-up initiated—intentionally or unintentionally resulted in gentrification (Bullen & Love, 2009; Harnack & Stollmann, 2016; Plevoets & Van Cleempoel, 2019).

Notably, some benefits of adaptive reuse are multi-dimensional. For example, job creation (Langston et al., 2008), either on a temporary or structural basis, represents both a social and economic benefit. Also, adaptive reuse can ensure accessibility and usability of heritage previously under limited access, e.g. industrial heritage (Damla Mısırlısoy & Günce, 2016; Yung & Chan, 2012). Thus, reuse can benefit the socio-cultural tenets of sustainable development. In sum, the adaptive reuse of cultural heritage is likely to entail some environmental, cultural, economic, and

social benefits, therefore contributing to sustainable development, when negative impacts are averted or mitigated.

Moreover, the adaptive reuse of cultural heritage can contribute to some of the Sustainable Development Goals (SDGs). Its contribution chiefly impacts Goal 11: “Make cities and human settlements safe, resilient and sustainable”, and Goal 12: “Ensure sustainable consumption and production patterns”. Specifically, adaptive reuse contributes to two targets of these goals: Target 11.4 “strengthen[s] efforts to protect and safeguard the world’s cultural and natural heritage” and Target 12.5 “... reduce waste generation through prevention, reduction, recycling and reuse” (United Nations General Assembly, 2015). The contribution of adaptive reuse to these targets stems from adaptive reuse being a strategy to conserve heritage by giving it a new purpose; thus, safeguarding heritage and averting the production of demolition waste.

#### **1.1.2.2 Adaptive reuse of cultural heritage, circular economy and circular cities**

The adaptive reuse of cultural heritage contributes not only to sustainability but also to circular economy and circular cities. This is because adaptive reuse allows managing, transforming, and reusing resources and their related values to create well-being and prevent waste generation (Fusco Girard, 2013). “Adaptation along with maintenance can ensure that the efficiency, use and service life of a building is maximized” (Douglas, 2006, p. 556). As circular economy minimizes resource extraction and environmental impact by extending the useful life of materials and elements also through reuse, so does the adaptive reuse of cultural heritage (European Commission, 2015; Foster, 2020). Therefore, by prolonging the lifespan of a non-renewable resource such as cultural heritage, adaptive reuse can contribute to the application of circular economy in human settlements (Ellen MacArthur Foundation, 2019; Fusco Girard & Vecco, 2021). Yet, little attention is given to cultural heritage and the existing urban fabrics in policy and strategy documents (Pintossi et al., 2021b) nor in the growing body of literature on circular cities (Gravagnuolo et al., 2019). First, the adaptive reuse of cultural heritage can contribute to resource efficiency and waste management, relevant aspects of circular economy. Extending the lifespan of heritage contributes to reducing the extraction of natural resources and consumption of energy to realize new buildings (Bullen & Love, 2011b; Plevoets & Van Cleempoel,

2019). Furthermore, by maintaining the existing built heritage, the production of construction and demolition waste is reduced compared with the demolition of the existing heritage and the construction of a new building (Yung & Chan, 2012). Therefore, the adaptive reuse of cultural heritage contributes to waste management and resource reuse in cities. Second, the adaptive reuse of cultural heritage can contribute to urban liveability and identity by preserving the values and attributes associated with the heritage reused (Bullen & Love, 2011b; Ikiz Kaya, Dane, et al., 2021; Ikiz Kaya, Pintossi, et al., 2021). Heritage reuse allows to conserve heritage resources and thus, to express cultural diversity and history (Bullen & Love, 2011b; Sheila Conejos et al., 2016; Plevoets & Van Cleempoel, 2019). Furthermore, the built environment, and heritage within it, plays a role in social sustainability and quality of life (Ellen MacArthur Foundation, 2019; Elsorady, 2014; Langston et al., 2008; Sektani et al., 2021). Foster and Saleh (2021b, p. 2) argue that the adaptive reuse of cultural heritage “actualizes” circular economy by contributing to “cities’ social and economic health while mitigating greenhouse gas emissions and C&D [Construction and Demolition] waste”.

### 1.1.2.3 Adaptive reuse of cultural heritage and climate change

The adaptive reuse of cultural heritage provides an opportunity to address climate change by integrating climate mitigation and adaptation. As mentioned, the adaptive reuse of cultural heritage entails environmental benefits. It can entail a reduction in energy consumption, greenhouse gas emissions, material use and waste generation (Bullen & Love, 2011b; Sheila Conejos et al., 2016; Fusco Girard, 2019). Adaptive reuse can also integrate strategies to further climate change mitigation such as rainwater reuse and the use of renewable energy (Fusco Girard, 2020). Thus, heritage reuse can contribute to addressing climate change by fostering a more environment-friendly built environment (Douglas, 2006; Foster, 2020; Sesana et al., 2019; Yung & Chan, 2012). Furthermore, climate change adaptation strategies can be integrated into the adaptive reuse of cultural heritage, e.g. maintenance (Sesana et al., 2018). Finally, the threats to heritage posed by climate change, such as accelerating degradation processes, can be addressed within adaptive reuse; thus, reducing the vulnerability of heritage to climate change and climate change impacts (Sesana et al., 2018).

## 1.2 Challenges to the adaptive reuse of cultural heritage

While adaptive reuse can contribute to and/or positively impacting on heritage conservation, sustainable development, circular economy and climate change mitigation and adaptation, several challenges hinder its implementation. Adaptive reuse in general and the adaptive reuse of cultural heritage in the specific present challenges. Particularly, adapting heritage introduces some specificities, i.e. dealing with its significance (Australia ICOMOS, 2013; Sheila Conejos et al., 2016; Yung & Chan, 2012). Yung & Chan (2012, p. 353) have noted that “the adaptive reuse of historic buildings is more complicated than the reuse of ordinary buildings” due to the need to minimize the impact on significance while adding value through a contemporary layer (Bullen & Love, 2011b; Department of Environment and Heritage, 2004).

Overall, the challenges to the adaptive reuse of cultural heritage can be categorized as “compliance with codes and regulations” and “current design requirements” (Sheila Conejos et al., 2016, p. 508). Table 1.2. illustrates the challenges faced by the adaptive reuse of cultural heritage with the underpinning literature. The literature reporting challenges to the adaptive reuse of cultural heritage varies in terms of the source of the challenges, the methodology adopted when the identification results from a research study, phases of the reuse process considered, stakeholders engaged in this identification, the geographical distribution considered, and the scale investigated.

Overall, very few studies have their primary focus on identifying the challenges encountered in the adaptive reuse of cultural heritage (Sheila Conejos et al., 2016; Fernandes et al., 2020). Yung and Chan (2012, p. 354) determined the challenges for a specific aspect of adaptive reuse, i.e. “incorporating the sustainability factors into” it. In general, the majority of research reports challenges in addressing factors affecting adaptive reuse or other aspects of this process (Aigwi et al., 2018; Bullen & Love, 2011b; Dyson et al., 2016; Remøy & Van Der Voordt, 2014; Shipley et al., 2006; Tan et al., 2018).



**Table 1.2.** Challenges for the adaptive reuse of cultural heritage and underpinning literature.

Challenge	References
Availability of reliable information	(Bourne, 1996; Sheila Conejos et al., 2016)
Availability of skilled craftsmanship and materials compatible with the original ones	(Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016; Douglas, 2006; Shipley et al., 2006)
Compliance with safety requirements	(Aigwi et al., 2018; Bullen & Love, 2011b; Clark, 2013; Sheila Conejos et al., 2016; Douglas, 2006; Shipley et al., 2006)
Conflict with the local community about the new uses of the heritage	(Elrod & Fortenberry, 2017a)
"Continuity of local community life"	(Yung & Chan, 2012)
Economic viability and costs	(Sheila Conejos et al., 2016; Douglas, 2006; Elrod & Fortenberry, 2017a; Fernandes et al., 2020; Shipley et al., 2006; Tan et al., 2018; Yung & Chan, 2012)
Handling of contaminations and hazardous materials	(Clark, 2013; Douglas, 2006; Hettema & Egberts, 2020; Remøy & Van Der Voordt, 2014; Shipley et al., 2006; Tan et al., 2018; Vrusho & Pashako, 2018)
Identification of the new function	(Damla Mısırlısoy & Günce, 2016; Plevoets & Van Cleempoel, 2019)
Minimization of change	(Douglas, 2006; Mehr et al., 2017; Shipley et al., 2006; Yung & Chan, 2012)
Obtainment of the approval of the change of use	(Sheila Conejos et al., 2016; Douglas, 2006; Elrod & Fortenberry, 2017a; Langston & Shen, 2007; Wilkinson et al., 2014)
"Physical restrictions" (e.g. the structural grid)	(Sheila Conejos et al., 2016; Douglas, 2006; Mehr et al., 2017; Plevoets & Van Cleempoel, 2019)
Political circumstances	(Bourne, 1996; Steinberg, 1996)
Prevention of values loss	(Mehr et al., 2017; Shipley et al., 2006; Yung & Chan, 2012)
Public awareness	(Bullen & Love, 2011b)
Status of physical decay	(Douglas, 2006; Dyson et al., 2016; Remøy & Van Der Voordt, 2014; Vrusho & Pashako, 2018)

Challenges identified by research studies are derived from two main research approaches. One approach entails the creation of a list of potential issues derived from a literature survey that is validated through interviews (e.g. Sheila Conejos et al., 2016; Yung & Chan, 2012). The other approach draws challenges to adaptive reuse directly from the outcomes of interviews (e.g. Bullen & Love, 2011b).

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Independently from the methodological approach adopted, often, the studies focus primarily on the decision-making of the adaptive reuse process in the identification of challenges (e.g. Bullen & Love, 2011b). Once decided to reuse instead of demolishing and constructing a new building, the identified issues mainly refer to the design phase of adaptive reuse and secondly to the initiation one. Some authors explicitly argue that adaptive reuse poses “challenges for designers” (Langston & Shen, 2007, p. 194; Damla Mısırlısoy & Günce, 2016, p. 91; Wilkinson et al., 2014, p. 252) and therefore the design phase of the process. The construction phase is mainly linked to the difficulties related to the availability of skilled craftsmanship and materials compatible with the original ones (Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016; Douglas, 2006; Shipley et al., 2006). The operational phase of the reuse process is only explicitly mentioned by Mısırlısoy and Günce (2016, p. 97) indicating that “in many adaptive reuse projects there are problems in management approaches to the heritage buildings”. In general, the phases of adaptive reuse considered in identifying its challenges are neither made explicit nor discussed in the literature. Hence, it remains unclear the reasons for the paucity of the issues identified in relation to the construction phase and the operation and maintenance one.

The challenges to the adaptive reuse of cultural heritage are derived mainly from the producers’ perspectives, e.g. architects and project managers. Within the literature scrutinized, this category of stakeholders is engaged in 90% of the studies involving humans in identifying the challenges or validating them. In half of the studies, producers were engaged together with few representatives of investors and regulators, such as local government council representatives and owners (Aigwi et al., 2018; Dyson et al., 2016; Fernandes et al., 2020; Remøy & Van Der Voordt, 2014; Yung & Chan, 2012). Four studies solely engaged producers (Bullen & Love, 2011b; Sheila Conejos et al., 2016; Shipley et al., 2006; Tan et al., 2018) while one determined the challenges by interviewing only municipal authorities, i.e. regulators (Bourne, 1996).

Challenges to the adaptive reuse of cultural heritage have been identified by investigating case studies in several world regions. Case studies reported in the literature are located in East Asia (Yung & Chan, 2012), Oceania (Bullen & Love, 2011b; Sheila Conejos et al., 2016) and North America (Elrod & Fortenberry, 2017a). Within Europe, some studies identified challenges for the adaptive reuse of specific typologies of heritage, e.g. industrial and engineering heritage (Hetteema & Egberts, 2020; Laconte, 2014).

Overall, research on the adaptive reuse of cultural heritage has identified challenges by focusing on the site scale, i.e., buildings and areas. Nevertheless, measures taken on other scales also impact the site and the reuse is also influenced by factors at the urban and regional (Grecchi, 2022; Damla Mısırlısoy & Günce, 2016). In addition, adaptive reuse is not limited to individual sites (Galdini, 2019; Wilkinson, 2018). Finally, adaptive reuse is advised to consider the context, not in isolation, considering various scales when dealing with heritage (Damla Mısırlısoy & Günce, 2016).

In sum, it exists the opportunity to expand the literature on the challenges to the adaptive reuse of cultural heritage by i) engaging a wide variety of stakeholders, ii) considering European case studies without focusing on a specific heritage typology, and iii) adopting a landscape approach with a multiscale perspective.

### 1.3 Problem statement

The adaptive reuse of cultural heritage can ensure heritage conservation and the transmission of this legacy to future generations, while possibly contributing to the sustainable development of the present.

The present research addresses the lack of understanding of the challenges that the process of the adaptive reuse of cultural heritage encounters. Challenges are barriers, obstacles, and constraints affecting the adaptive reuse of cultural heritage. These challenges prevent wider adaptive reuse of cultural heritage, thus jeopardizing heritage conservation. Furthermore, this prevents the cultural heritage from contributing to the sustainability of the urban and rural environments. To facilitate the adoption of a proactive attitude in the adaptive reuse of cultural heritage, these barriers demand to be overcome. Contextually to

the investigation of these challenges, possible solutions could be identified. This research has the final aim of supporting and improving policy-making to find effective ways to promote cultural heritage adaptive reuse as well as informing the stakeholders of adaptive reuse of cultural heritage by identifying the existing challenges.

Particularly, the present research attempts to expand the literature on challenges to adaptive reuse. To expand this literature, this research focuses specifically on the reuse of cultural heritage, therefore acknowledging the heritage specificity in adaptive reuse, i.e. dealing with heritage significance. Moreover, this research furthers the knowledge about these challenges by seizing the opportunity to expand the literature about the challenges to the adaptive reuse by i) engaging a wide variety of stakeholders, ii) considering European case studies without focusing on a specific heritage typology, and iii) adopting a landscape approach with a multiscale perspective.

First, the knowledge about the challenges to the adaptive reuse of cultural heritage can be further developed by enlarging the base of stakeholders engaged in their identification. The reuse processes entail a wide variety of stakeholders that can be categorised as users, producers, investors, and regulators. Within this spectrum of stakeholders, some have been more extensively involved in the identification of challenges, i.e. the producer such as practitioners like architects. Yet, the stakeholders of adaptive reuse are also owners, (Bullen, 2007; Dyson et al., 2016; Shipley et al., 2006); building managers (Bullen & Love, 2011b); developers; heritage consultants; local authorities; inhabitants; bankers, financial institutions, and investors (Shipley et al., 2006). Therefore, enlarging the base of stakeholders engaged can further the understanding of the challenges to the adaptive reuse of cultural heritage by broadening the stakeholders' perspective considered in identifying them.

Second, the literature on the challenges to the adaptive reuse of cultural heritage can be expanded in terms of the geographical distribution of case studies considered in identifying such challenges. Particularly, within the European region, studies identifying challenges focused on specific typologies, e.g. small shipyards (Hetteema & Egberts, 2020) and industrial and engineering heritage (Laconte, 2014). Whereas in other world regions, e.g. Oceania, challenges were identified considering a variety of typologies (Bullen & Love, 2011b; Sheila Conejos et al., 2016). Therefore,

knowledge about the challenges to the adaptive reuse of cultural heritage could be developed considering European case studies without a typology-specific focus.

Finally, the current understanding of the challenges investigated could be further developed by adopting a multiscale perspective, considering both the site and the urban scales. Heritage reuse is influenced by urban and regional factors and affected by measures and interventions taken also beyond the site scale (Grecchi, 2022; Damla Mısırlısoy & Günce, 2016). Furthermore, adaptive reuse is not limited to individual sites (Galdini, 2019; Wilkinson, 2018) and it is advised to consider the context and its multilayering, especially when dealing with heritage (Damla Mısırlısoy & Günce, 2016). Thus, the present research assumes a multiscale perspective and relies on an integrated and holistic approach such as the HUL approach.

#### **1.4 Research aim, objective, and scope**

The research aims at identifying the factors influencing the process of cultural heritage adaptive reuse. To achieve this goal, a set of intertwined objectives has been established. Following the identification of the challenges–negative factors–characterizing the process of cultural heritage adaptive reuse, plausible solutions–positive factors–were also identified. While identifying the challenges hampering the heritage reuse, this research also furthered the knowledge about these challenges and possible solutions contributing to the literature by engaging a broad variety of stakeholders, considering multiple scales, and expanding the geographical distribution of the case studies analysed.

To better reflect the reality and diversity of the different implementations of cultural heritage adaptive reuse, the challenges have been revealed through the systematic appraisal of evidence in three case studies at multiple scales. Per each case study, once identified the negative factors, i.e. challenges, factors to overcome the barriers, i.e. solutions, will also be identified. Afterwards, the comparison of the three case studies has allowed identifying trends within these challenges. Specifically, commonalities among the challenges were determined, and variations to a less extent. Finally, the common challenges identified have been further

analysed to reveal their association with the SDGs, identifying additional trends within the common challenges.

Although challenges are context-specific and change over time, further studies are needed to compare case studies. This comparison can enable the generalization of findings to abstract them through a higher-level synthesis (Eisenack et al., 2014). Such findings might be transferable to other contexts and be more broadly applicable.

The understanding gained on the process of cultural heritage adaptive reuse will inform actors engaged and interested in the adaptive reuse of cultural heritage about the challenges that it entails and possible solutions.

Chiefly, this dissertation provides insights into the challenges encountered in the adaptive reuse of cultural heritage from the stakeholder perspective by attempting to attain the following objectives:

- To identify the challenges to the adaptive reuse of cultural heritage at multiple scales from the stakeholders' perspective by analysing case studies.
- To identify solutions to some of these challenges by analysing case studies.
- To determine the common challenges within the case studies analysed.
- To categorize the common challenges from the perspective of the SDGs.

## 1.5 Research questions

What factors<sup>1</sup> influence the process of cultural heritage adaptive reuse?

Sub-questions:

- What factors negatively affect the process of cultural heritage adaptive reuse?
- How to overcome the negative factors identified?
- What trends are recognized among these factors?

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<sup>1</sup> Factors are either challenges, i.e. negative factors comprising barriers, obstacles, or constraints affecting the adaptive reuse of cultural heritage, or solutions, i.e. positive factors.

## 1.6 Research Methodology

This doctoral research employed several research methods to achieve its aim and objectives. After performing a literature review to assess the state-of-the-art, a multi-case study analysis is performed. Data was analysed both qualitatively and quantitatively by content analysis with thematic and frequency synthesis. Finally, a cross-sectional comparative study was performed. The main body of the thesis is based on a collection of research articles; therefore, the methodology adopted and the related methods are detailed in Chapter 2 to Chapter 5.

A multi-case study analysis (Eisenhardt & Graebner, 2007) is performed to conduct this exploratory study and compare the three case studies selected, namely the cities of Amsterdam in The Netherlands, Rijeka in Croatia, and Salerno in Italy. These cities were selected because of their geographical distribution and diversity in socio-economic-political contexts and scales within Europe. The reason to select European case studies is twofold. First, this selection contributes to expanding the geographical diversity of the case studies considered in determining the challenges to the adaptive reuse of cultural heritage, as already explained in describing the problem statement. Second, these case studies were pilot cities in the CLIC project, the research project embedding the present doctoral research. Each case study is described in detail in its dedicated chapter. The case studies employed a similar data collection–stakeholder-landscape-multiscale based–and analysis methodology to enable data comparability.

The data collection consisted of a literature review and a series of focus groups during the Historic Urban Landscape workshops (hereafter HUL workshops). The survey of the literature ascertained the state-of-the-knowledge on the challenges encountered in the adaptive reuse of cultural heritage. Its findings provided an overview of the challenges already identified and allowed to determine the opportunities to expand the current knowledge on these challenges. These findings are both reported in the introductory chapter and the main body of this doctoral dissertation, which report the results of the fieldwork. The fieldwork underpinning the present research entails a series of HUL workshops (Pintossi et al., 2021a, 2021b, 2022).

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During these stakeholder engagement workshops, qualitative primary data was collected by employing focus groups and structuring the workshops by adapting the World Cafè method (Brouwer & Brouwers, 2017; Brown et al., 2005; Löhr et al., 2020). This data collection was “geared towards (...) conducting the research process with those people whose life-world and meaningful actions are under study” (Bergold & Stefan, 2012, p. 2)—accounting for the participatory approach that cultural heritage now recommends (Council of Europe, 2005). Focus groups were chosen as a data collection method because it is a participatory and “collects data through group interaction on a topic determined by the researcher” (Morgan, 1996, p. 130). This method and the World Cafè method were adopted for the data collection because they allow harvesting information based on group intelligence and entails mutual learning among stakeholders, thus incentivizing participation (Löhr et al., 2020). Furthermore, this data collection method allowed participants to “probe, prompt and clarify” (Aigwi et al., 2018, p. 394). The identification of challenges and solutions took place as rounds of facilitated roundtable discussions with participants grouped in multidisciplinary-multibackground teams (see Appendix A). Notably, the validation of the data, i.e. the participants’ contributions to the discussions, is contextual to the data collection: it derives from the countercheck among stakeholders who validate the data by reaching consensus during the roundtable discussions.

The participants invited to attend the HUL workshops attempted to represent the spectrum of stakeholders in the adaptive reuse of cultural heritage. They were selected by purposeful sampling (Sheila Conejos et al., 2016; Patton, 2015; Sarabi et al., 2020) to engage relevant stakeholders in identifying the challenges encountered in the adaptive reuse of cultural heritage and solutions to overcome them. The adaptive reuse of cultural heritage is a multi-disciplinary (Plevoets & Van Cleempoel, 2019) and multi-actor (Sheila Conejos et al., 2016; Damla Mısırlısoy & Günce, 2016; Wilkinson, 2014b) practice interlinking heritage, urbanism, and sustainable development. Therefore, the participants had been involved in practices and research concerning adaptive reuse, heritage conservation and management, circular cities, and sustainable urban development fields within the investigated city and/or Europe. They were sampled among stakeholders from the public, private, knowledge, and NGO sector to attempt to represent users, producers, investors, and



regulators, i.e. the categories of stakeholders identified by Misirlisoy & Günce (2016) for adaptive reuse. This sampling process was led by the local partners of the research project framing this doctoral research. Therefore, the participants' selection reflects their idea of stakeholders of the adaptive reuse of cultural heritage in their local context. The workshop participants voluntarily accepted the invitation to participate in the workshops. These workshops were part of the research activities of the CLIC project for which participants signed informed consent forms. The data collected are anonymous and the result of the teams' discussions.

Participants were supported by a framework based on the six HUL steps and introducing a multi-scale perspective in identifying challenges and solutions for the adaptive reuse of cultural heritage. This identification framework structured the assessment of processes of adaptive reuse of cultural heritage by participants. Participants focused on one of the HUL steps in each round of roundtable discussion. Specifically, the HUL steps can be adopted as a framework to analyse conservation processes since they guided the establishment of action plans for heritage conservation at the local level (Pereira Roders & Bandarin, 2019), such as the series of workshops in Eastern Africa (Zanzibar in Tanzania, Lamu in Kenya, and Island of Mozambique in Mozambique) to identify actions to integrate conservation and planning (Van Oers, 2013). Therefore, as adaptive reuse is a conservation strategy, the HUL steps were selected to frame its assessment to identify its challenges and solutions. While assessing adaptive reuse by focusing on one of the HUL steps, participants considered the "site", "urban", and "elsewhere" scales. This third scale was intended to offer the participants the possibility to refer to specific scales or other contexts deemed relevant for the discussion. Each workshop comprised six sessions of six parallel focus groups.

The qualitative data collected during the HUL workshops was analysed by content analysis (Krippendorff, 1980). The corpus was inductively and deductively coded by manifest analysis, synthesised by frequency synthesis and thematic synthesis (Bengtsson, 2016; Thomas & Harden, 2008), and validated by peer debriefing (Janesick, 2015). Details on the content analysis are reported in Chapter 2 to Chapter 5 and Appendix A. For the analysis of three case studies, the content analysis drew the challenges and solutions. In the comparative study, the content analysis informed the identification of the challenges common to the three case studies.

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Finally, a small-N, cross-sectional comparative study was performed to advance the understanding of challenges to the adaptive reuse of cultural heritage. This comparative study adopted challenges and sub-challenges, identified by content analysis, as units of comparison. The themes, identified by the content analysis, were employed as comparison dimensions. In performing the comparative study, construct biases were avoided by both adopting a similar methodology for the data collection and involving participants representing similar stakeholder groups in each case. Engaging similar participants also reduced the chances of bias sampling. The measurement bias was reduced by having the same researcher perform the content analysis, validated by peer debrief (Janesick, 2015). The descriptive comparison of the three case studies identified common challenges and sub-challenges. Therefore, these obstacles are experienced by stakeholders in three different contexts. Thus, this comparative study enabled a first generalization of the challenges encountered in the adaptive reuse of cultural heritage.

## 1.7 Research significance

The present research contributes to revealing and deepening the understanding of the challenges of the adaptive reuse of cultural heritage. Challenges hinder this adaptive reuse. Yet, challenges can reveal opportunities (Clark, 2013) and can be seen as opportunities to enable the reuse practices by overcoming them. Enabling the adaptive reuse of cultural heritage, cultural-led sustainable development and the transition towards circular cities can be promoted.

The present research provides outcomes in terms of knowledge to support cultural heritage adaptive reuse practices. These practices could contribute to enhancing the liveability of urban environments, contributing to urban regeneration, and enabling identity reestablishment, while possibly reducing negative externalities and internalities in urban landscapes, e.g. land consumption and social marginalization.

Systemic adaptive reuse of cultural heritage could be promoted through (i) a deeper understanding of its challenges and (ii) identifying plausible solutions to overcome these barriers within each case study. The knowledge gained about the adaptive reuse of cultural heritage will benefit the case studies analysed and comparable realities. The

involvement of multidisciplinary stakeholders and the cross-sectional comparison of the challenges identified in the three cases represent an edge of this research. This research provides practitioners involved in the design of adaptive reuse, citizens promoting reuse initiatives, policy-makers, and decision-makers with the factors that might hurdle the process and plausible solutions, thus a more proactive approach to adaptive reuse can be promoted.

Particularly, the research significance derives from its multifold relevance.

- Relevance for science:
  - The scientific community can gain insights into the multi-scale challenges faced in the case studies from the stakeholders' perspectives.
  - The findings from the comparative study can contribute to further theorising these challenges and to their mitigation.
  - The additional knowledge drawn from both the case studies and the comparative study can be incorporated into future research on heritage conservation through adaptive reuse.
  - Scholars can enrich the body of knowledge on the adaptive reuse of cultural heritage by investigating the gaps identified in this dissertation and addressing its limitations.
  - Future research can adopt a similar research approach which is not context-bound.
  - The research on the HUL approach can gain insights from the adoption of the HUL-based framework employed to assess the conservation process of adaptive reuse to identify its challenges and possible solutions.
- Relevance for governance:
  - Governments and authorities at various levels can use the evidence provided to enable the adaptive reuse of cultural heritage.
  - The findings presented can inform decision-making and policy-making for the adaptive reuse of cultural heritage, both within the case studies investigated and in similar contexts.
- Relevance for practice:
  - Both professional and bottom-up citizen-led initiatives can benefit from the evidence provided on the existing challenges by proactively planning to overcome them.

- Practitioners, e.g. architects and project managers, amateurs, and citizens can refer to the solutions identified to overcome their challenges.
  - Other socio-cultural-economic-geographical contexts can adopt a similar research approach to determine challenges and solutions to address them.
- 1
- Relevance for society:
    - Advancing the knowledge on the challenges encountered by stakeholders in the adaptive reuse of cultural heritage can enable this conservation process; therefore, heritage resources can be conserved promoting sustainable development, enhancing liveability, contributing to urban regeneration, and fostering identity.
    - The HUL workshops provide examples of practices of multi-stakeholder engagement in activities related to heritage conservation, such as this research. This contributes to gathering knowledge on a guiding principle of the HUL approach: stakeholder engagement.

## 1.8 Outline

This dissertation began by introducing the research background, key concepts for this research, the state-of-the-art, the research aim, the research question, the methodology, and the research significance. Subsequently, the findings of the HUL workshops are reported and discussed in Chapter 2 to Chapter 4. Particularly, the three case studies are reported following the chronological order of the fieldwork. Afterwards, the case studies investigated are compared to determine the common challenges, as detailed in Chapter 5. This comparison enables a preliminary generalization by synthesising the findings from the case studies. Finally, the main conclusions and recommendations of this dissertation are illustrated in Chapter 6. Notably, this dissertation is based on a collection of papers and articles that were previously published and presented. Therefore, each chapter can be read separately and has its own introduction and methodology. Being paper-based, this dissertation includes some repetitions.

## Chapter 2

# Identifying challenges and solutions in cultural heritage adaptive reuse through the Historic Urban Landscape approach in Amsterdam

This chapter is adapted from:

Pintossi, N., Ikiz Kaya, D., & Pereira Roders, A. (2021). Identifying Challenges and Solutions in Cultural Heritage Adaptive Reuse through the Historic Urban Landscape Approach in Amsterdam. *Sustainability*, 13(10), 5547. <https://doi.org/10.3390/su13105547>.

Pintossi, N., Ikiz Kaya, D., & Pereira Roders, A. (2021). Adaptive Reuse of Cultural Heritage in Amsterdam: Identifying challenges and solutions through the Historic Urban Landscape approach. In U. Pottgiesser, S. Fatorić, C. Hein, E. de Maaker, & A. Pereira Roders (Eds.), *LDE Heritage Conference on Heritage and the Sustainable Development Goals: Proceedings* (pp. 304-314). TU Delft Open. <http://resolver.tudelft.nl/uuid:43820685-c20d-4bbd-8127-aea825b27b95>.

The dataset analysed in this chapter is deposited at <https://10.5281/zenodo.4250495>

This chapter provides an overview of challenges and solutions identified in the first case study considered in this dissertation, i.e. the city of Amsterdam, The Netherlands. Challenges and solutions referring to recurrent themes are presented in detail.

**Abstract:** Cultural heritage drives and enables sustainable urban development. The adaptive reuse of cultural heritage creates values while prolonging the lifespan of heritage. Similarly, circular economy creates value while extending the useful life of materials and elements through their reuse. Existing studies on adaptive reuse challenges seldom focus on cultural heritage properties, and they are often identified through the engagement of a limited variety of stakeholders, as compared to the actors normally involved in adaptive reuse. Filling this gap, this chapter provides a preliminary baseline of challenges faced by the city of Amsterdam from the perspective of various involved stakeholders and suggests solutions to address them. The participants represented the public, private, knowledge, and third sectors. The methods used were the following: for data collection, a multidisciplinary workshop using the steps of the Historic Urban Landscape approach as an assessment framework applied to multiple scales on adaptive reuse, and for data analysis, manifest content analysis. The results expanded the range of challenges and solutions reported by previous literature on the adaptive reuse of cultural heritage in content and scale by identifying 61 themes—e.g., knowledge and civic engagement. Tools and stakeholders were also identified. These findings provide a reference for future practice, policy-making, and decision-making, facilitating the adaptive reuse of cultural heritage to capitalize on its potential for sustainable development and circular economy.

## 2.1 Introduction

Urban settlements currently face an unprecedented pace of urbanization (United Nations Department of Economic and Social Affairs Population Division, 2019), coupled with the adverse impacts of climate change and resource scarcity (United Nations (Habitat III), 2017; United Nations Human Settlements Programme (UN-Habitat), 2016b). To overcome such challenges, these settlements strive for sustainability (United Nations (Habitat III), 2017)—in its cultural, social, environmental, and economic dimensions (Dessein et al., 2015)—and circular economy (Ellen MacArthur Foundation, 2019; European Commission, 2015). In this context, cultural heritage can act as a driver and enabler of sustainable development (United Nations General Assembly, 2015): enhancing urban liveability, fostering human well-being, and maintaining urban identity (Burnham, 2019; CHCfE Consortium, 2015b; Guzmán et al., 2017; Mora & Bolici, 2017; Ost, 2021; Winter, 2016). Therefore, the conservation of cultural heritage, and built heritage in particular, plays a role in sustainable urban development (Labadi et al., 2021; Tweed & Sutherland, 2007).

A strategy to conserve built cultural heritage is adaptive reuse (ICOMOS, 1964), which can enable to capitalize on this heritage potential for sustainable urban development (Fusco Girard, 2020; Galdini, 2019; Heath, 2001). Adaptive reuse is the process that extends “the building’s [and site’s] physical and social functions by giving the building a new purpose while conserving its historic and cultural significance” (Sheila Conejos et al., 2016, p. 508) (p. 508). This process entails four phases: initiation, planning and design, construction, and operation and maintenance (Geraedts & Wamelink, 2009; Martani, 2015). At all stages, a variety of actors is involved, such as architects, engineers, local authorities, owners, developers, constructors, heritage professionals, and users, among others (Plevoets & Van Cleempoel, 2019; Wilkinson, 2014b). This variety of actors also represents the wide spectrum of disciplines involved in the adaptive reuse of cultural heritage, e.g., architecture, engineering, and heritage studies (Foster, 2020; Plevoets & Van Cleempoel, 2019). In some cases, adaptive reuse can entail limitations and conflicts of interests, e.g., lower energy efficiency compared to new buildings or negative gentrification (Plevoets & Van Cleempoel, 2019). Yet, adaptive reuse can contribute to sustainable development, with positive economic, environmental, social, and cultural impacts (Bullen & Love, 2011b; Sheila Conejos et al., 2016;

Fusco Girard, 2019; Wilkinson, 2014b; Yung & Chan, 2012), creating values such as sense of place and new income streams (Gustafsson, 2019; Hill, 2016). Furthermore, adaptive reuse can contribute to addressing the threats posed to heritage by climate change, e.g., acceleration of degradation. This contribution is twofold: mitigation—such as improving the energy efficiency of heritage—and climate change adaptation by incorporating strategies for anticipatory climate change adaptation, such as promoting maintenance (Fatorić & Egberts, 2020; Sesana et al., 2018; Yung & Chan, 2012).

Adaptive reuse prolongs the lifespan of a non-renewable resource such as cultural heritage; therefore, it can be regarded as a contributor to the transition of human settlements towards circular economy (Ellen MacArthur Foundation, 2019; Fusco Girard & Vecco, 2021). In fact, circular economy entails production and consumption processes that minimize resource extraction and environmental impact by extending the useful life of materials and elements through reuse (European Commission, 2015; Foster, 2020). Despite this contribution, little attention is given to cultural heritage and the existing urban fabrics in policy and strategy documents for circular cities, nor in the growing body of literature on the circular economy within the built environment (Gravagnuolo et al., 2019). This limitation is being addressed in a timely manner by a European-funded research project: the CLIC project—Circular models Leveraging Investments in Cultural heritage adaptive reuse (*About CLIC Project*, n.d.). This project explores the development and implementation of circular models for the adaptive reuse of cultural heritage (CLIC Consortium, 2019; Fusco Girard, 2019). Within the CLIC project, this study identifies with a participatory approach the challenges affecting the adaptive reuse of cultural heritage and how to solve them. This manuscript details and contextualizes in the state of the art a brief previous conference paper (Pintossi et al., 2021c; Pottgiesser et al., 2021).

Even if the research on adaptive reuse is growing, the knowledge available on its challenges and solutions remains limited. Firstly, available research considers adaptive reuse as a product rather than a process, focusing on, e.g., specific phases and aspects of the adaptive reuse lifecycle as the regulatory and technical aspects (Sheila Conejos et al., 2016; Douglas, 2006; Heath, 2001). Secondly, several studies have investigated challenges of the built environment, referring to adaptive reuse in general (Bullen, 2007; Douglas, 2006), or specific values of cultural heritage, e.g.,



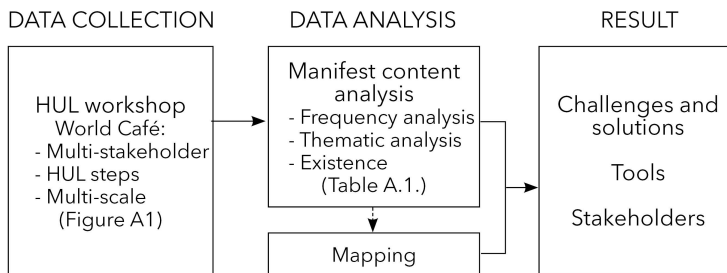
historic (Remøy & Van Der Voordt, 2014; Wilkinson, 2014a). Hence, studies on the specific aspects of cultural heritage, such as its significance, multiplicity, and variety of values, are to be furthered (Australia ICOMOS, 2013; Bullen & Love, 2011b). Thirdly, previous research jointly focusing on challenges and the adaptive reuse of cultural heritage are either conducted in non-European geographical settings, e.g., East Asia (Yung & Chan, 2012), Oceania (Bullen & Love, 2011b; Sheila Conejos et al., 2016), and North America (Elrod & Fortenberry, 2017a), or focused on specific typologies of cultural heritage in Europe, such as industrial buildings (Giuliani et al., 2018; Hetteema & Egberts, 2020). Finally, to date, the identification of these challenges considered the views of few stakeholders—mostly owners, developers, and architects (Bullen & Love, 2011a; Sheila Conejos et al., 2016)—although a wide variety of other actors is normally involved in the adaptive reuse of cultural heritage, e.g., investors, heritage professionals, and users (Damla Mısırlısoy & Günce, 2016; Plevoets & Van Cleempoel, 2019), as flagged by Conejos et al. (Sheila Conejos et al., 2016). Therefore, the current knowledge gap on the challenges for the adaptive reuse of cultural heritage could be reduced by broadening the scope, geographical settings, and variety of stakeholders involved in its production.

This research aims to grow the knowledge about the challenges to the adaptive reuse of cultural heritage, and solutions, by identifying them within a European case study: the city of Amsterdam in the Netherlands. This identification engages a broad range of stakeholders, reflecting the variety of actors and disciplines involved in the adaptive reuse of cultural heritage, while also acknowledging the demand for participation in heritage management (Council of Europe, 2005; UNESCO, 2011b; Loes Veldpaus et al., 2013). This research seeks to answer the following research questions: (i) What are the challenges to the adaptive reuse of cultural heritage according to the stakeholders in the city of Amsterdam? and (ii) how these challenges have been or could be tackled. Since different stakeholders have diverse concerns and priorities, emerging at different phases of the lifecycle of adaptive reuse, it is hypothesized that engaging a broader range of stakeholders could result in a wider spectrum of challenges hampering heritage reuse. This novel knowledge could facilitate the adaptive reuse of cultural heritage by informing future practices, decision-makers, and policy-makers on these challenges and how to tackle them in urban contexts similar to the one considered. Not

only does the adaptive reuse of cultural heritage sustain a resource such as heritage over time, but it also contributes to the four tenets of sustainable urban development (Bullen & Love, 2011b; Fusco Girard & Vecco, 2021; Lami, 2020; Plevoets & Van Cleempoel, 2019; Yung & Chan, 2012). By facilitating adaptive reuse, therefore, the heritage potential for sustainable urban development and circular economy could be better leveraged (Fusco Girard & Vecco, 2021).

## 2.2 Materials and methods

An overview of the methodological framework applied is illustrated in Figure 2.1. The methodology is detailed below, and further insights are provided in Appendix A.



**Note:** Details are also provided in Appendix A.

Figure 2.1. Overview of the methodological framework.

### 2.2.1 Data collection

This research collected primary data through a participatory stakeholder workshop “geared towards (...) conducting the research process with those people whose life-world and meaningful actions are under study” (Bergold & Stefan, 2012, p. 2)—accounting for the participatory approach that cultural heritage now recommends (Council of Europe, 2005). This workshop was structured by adapting the World Café method (Brouwer & Brouwers, 2017; Brown et al., 2005; Löhr et al., 2020) to have a broad overview of the issue investigated (Appendix A). Although this method was chosen because it is a participatory method to harvest information based on group intelligence, it also incentivizes participation by engaging stakeholders in mutual learning (Bergold & Stefan, 2012; Brouwer & Brouwers, 2017; Brown et al., 2005; Löhr et al., 2020). In various research

domains, studies have adopted the World Café to collect qualitative data (Löhr et al., 2020), e.g., to identify barriers, opportunities, and design requirements (Broom et al., 2013; Kavanagh et al., 2020; Palacios-Agundez et al., 2013; Silva & Guenther, 2018). The identification of challenges and solutions took place as rounds of facilitated roundtable discussions (Figure A.1). The question discussed within the World Café was about this identification, which was framed by the six steps (henceforth, HUL steps) of the approach implementing the UNESCO 2011 Recommendation on the Historic Urban Landscape (HUL) (UNESCO, 2011a) and a multi-scale perspective.

The workshop used the HUL steps of the HUL approach (UNESCO, 2011a). These steps are employed in developing conservation and management processes at the local level (Van Oers, 2013). Therefore, it was assumed that they could frame the analysis of conservation and management processes, such as the adaptive reuse of cultural heritage. This assumption justified the use of the HUL steps to frame the data collection. In fact, the steps (Table 2.1) were employed as an assessment framework for the adaptive reuse of cultural heritage to better contextualize the identification of challenges and their solutions in the broader heritage planning process (Pintossi et al., 2021a), considering the various dimensions composing the urban landscape with an interdisciplinary perspective (Ginzarly et al., 2019). With this approach, the interdisciplinary nature of both adaptive reuse (Plevoets & Van Cleempoel, 2019) and heritage (Rodwell, 2003) was acknowledged, and the various dimensions of cultural heritage and its context were considered.

**Table 2.1.** HUL steps used by the participants as a framework to identify challenges in cultural heritage adaptive reuse and their possible solutions.

Short name	HUL step description <sup>1</sup>
Mapping	Mapping natural, cultural, and human resources
Consensus	Reaching consensus on values and related attributes to protect
Vulnerability	Assessing the vulnerability of the identified values and related attributes to change and development
Integrate	Integrating values, related attributes, and their vulnerability in urban development frameworks
Prioritize or Prioritization	Prioritizing actions for conservation and development
Partnership	Establishing local partnerships and management frameworks for each of the actions

<sup>1</sup>Adapted from Gravagnuolo & Girard (2017), Veldpaus (2015), and WHITRAP & City of Ballarat (2016).

This identification of challenges and solutions also investigated the impacts of measures and practices at multiple scales for the case study analysed (The 100 Resilient Cities, referenced in Wilkinson, 2018). It considered (i) Pakhuis de Zwijger as an example of site scale; (ii) the city of Amsterdam, the Netherlands, as urban scale; and (iii) “elsewhere” for other scales or contexts, e.g., the European level (Figure A.1).

The building complex Pakhuis de Zwijger—managed by “Pakhuis de Zwijger Foundation,” a partner of the CLIC project—is a former warehouse of the Amsterdam waterfront, listed as cultural heritage, a target of adaptive reuse, and today a cultural and communal hub (Architectenbureau J. van Stigt B.V., n.d.; Pakhuis de Zwijger, n.d.). The warehouse was built in functionalist style in the 1934 by the architect De Bie Leuvelink Tjeenk and engineer Bakker (Stadsherstel Amsterdam n.v., 2011). When the dock activities ceased in the 70s, the warehouse remained vacant until it was squatted in and used for artistic activities (*Renovatie Pakhuis De Zwijger Amsterdam. Architecten Bureau J. van Stigt, Amsterdam [Amsterdam Pakuis De Zwijger Renovation. Arcititects Studio J. van Stigt, Amsterdam]*, 2007). In 1997, the municipality of Amsterdam assigned the building a cultural function. On that occasion, the foundation Pakhuis de Zwijger was created (A.J. van Stigt. *Pakhuis de Zwijger/De Zwijger Warehouse*, n.d., p. 124) to group the stakeholders and squatters for the continuation of their activities in a commercial way. The warehouse was in dilapidated conditions, and around 2000, it was threatened with demolition because it laid on the trajectory of a planned bridge (Herbestemming.nu, n.d.). Although Pakhuis was spared from the integral demolition due to the acquired status of national monument, some parts were torn down, allowing the passage of the bridge while further deteriorating its structural soundness. After several unfeasible or unaffordable plans, in 2004, the promoters and future tenants commissioned a reuse plan from the architect André Van Stigt, who involved Stadsherstel, an Amsterdam-based restoration company. A plan adapting the schedule to the building was proposed and the detailed layout was discussed with the future tenants. “Just a few changes (...) [were] made to its appearance. (...) On the other hand, the interior modifications were numerous and sometimes radical” (Stadsherstel Amsterdam n.v., 2011, pp. 14-15). Currently, the 5000-square-meter building hosts a 350-person auditorium, two smaller halls, studios, offices, and a café-restaurant (*Renovatie Pakhuis De Zwijger Amsterdam*.

*Architecten Bureau J. van Stigt, Amsterdam [Amsterdam Pakhuis De Zwijger Renovation. Architects Studio J. van Stigt, Amsterdam], 2007*). The foundation Pakhuis de Zwijger is still the custodian of the former warehouse, and the owner is Stadsherstel (Ikiz Kaya, Lu, et al., 2021). The adaptive reuse of Pakhuis de Zwijger was a bottom-up process entailing strong stakeholder involvement, e.g., future tenants, in the initiation and design phase of the reuse (Stadsherstel Amsterdam n.v., 2011). In addition, this reuse integrated sustainable measures such as photovoltaic panels and embedded good practices of governance and operation models (Ikiz Kaya, Lu, et al., 2021). Furthermore, being operational since 2006, this case allows for reflection upon the whole lifecycle of adaptive reuse, from initiation to operation, instead of limiting the identification of challenges to some phases, as in earlier literature.

Pakhuis de Zwijger personifies the role that heritage and its reuse play in the growth of the city. According to the Municipality of Amsterdam, the goal is “to cherish our historical values, and ensure we maintain an attractive, diverse and sustainable city, in which historic buildings are not only iconic but also economically and socially relevant” (City of Amsterdam, n.d.). Nevertheless, a “relatively traditional conceptualization of heritage is still more common in heritage policy in Amsterdam” (Loes Veldpaus & Bokhove, 2019, p. 115). This is also reflected in the lack of an explicit mention of heritage and its complex set of values in its policy documents on circular economy, even when the city of Amsterdam is one of the pioneers in the transition towards circular economy (Circle Economy et al., 2016; Prendeville et al., 2018) and when adaptive reuse fully aligns with these aspirations (Fusco Girard, 2019).

The participants in the HUL workshop represented a broad range of stakeholders encountered in the adaptive reuse of cultural heritage. They were selected for their experience in cultural heritage, adaptive reuse, circular economy, and sustainability-related and (urban) development initiatives and institutions. They were familiar with the adaptive reuse of cultural heritage, the city of Amsterdam, and/or Pakhuis de Zwijger. The participants represented developers, representatives of the Municipality of Amsterdam, researchers, and NGOs, such as the foundation Pakhuis de Zwijger, which invited the participants. In total, 40 participants and 6 facilitators engaged in the roundtable discussion: 17 participants and 6 facilitators from academia and knowledge institutions from the Netherlands and Europe (50%), 10 from the public sector (22%), 7 from

the private sector (15%), and 6 from NGOs and the third sector (13%). To avoid confusion, in the following sections, the term “participant(s)” is used to distinguish the stakeholders taking part in the workshop from when stakeholders would be mentioned in their contributions.

## 2.2.2 Data analysis

### 2.2.2.1 Definitions

Definitions are provided in Table 2.2, explaining the key concepts for the data analysis and result reporting.

Table 2.2. Definition of key concepts used in the data analysis.

Keyword	Definition	Reference
Factor	Identified element that affects the adaptive reuse of cultural heritage. Depending on the context, it entails a challenge or a solution. For extension, used to refer to collectively challenges and solutions	(Pintossi et al., 2021c)
Challenge	Any factor negatively affecting the adaptive reuse of cultural heritage. It encompasses challenges, barriers, constraints, obstacles, or hurdles hampering the adaptive reuse of cultural heritage	(Eisenack et al., 2014)
Solution	Any factor positively affecting the adaptive reuse of cultural heritage by overcoming a challenge	-
Statement	Contribution identified neither as a challenge nor as a solution	-
Theme	Topic shared among contributions identified by the content analysis	(Thomas & Harden, 2008)

#### 2.2.2.2 Data preparation and content analysis

The collected data were transcribed in a digital form, cleaned (Wickham, 2014), completed, and prepared for the content analysis, as detailed in Appendix A (Krippendorff, 1980). A manifest analysis of the corpus (Bengtsson, 2016) was performed, employing both deductive and inductive coding (Table A.1). For the factors, frequency and thematic synthesis were applied (Thomas & Harden, 2008). Coding for existence (Krippendorff, 1980) guided the mapping of tools and stakeholders mentioned in the contributions. While performing the content analysis, the coding consistency was improved by clustering terminology denoting similar concepts, since participants sometimes used synonyms instead.

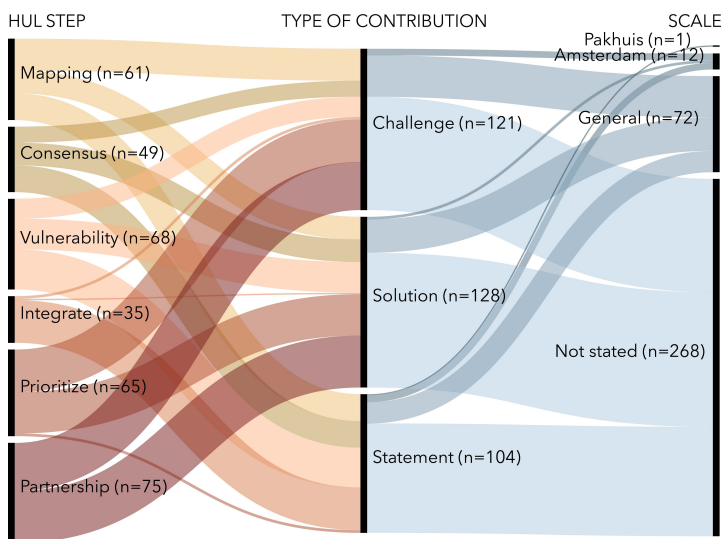
### 2.2.2.3 Mapping

The results of the thematic analysis of the factors were summarized using a graph mapping the challenge-solution relations among themes. This graph also related the themes to the HUL steps used for the data collection. To provide further insights, tools and stakeholders mentioned in the contributions were mapped. Tools were classified according to the tool categories of the HUL approach (UNESCO, 2011b). Stakeholders were classified using an adaptation of the Penta Helix taxonomy (Calzada, 2013; Pentahelix project, 2018).

## 2.3 Results

### 2.3.1 Challenges, solutions, and statements

The dataset analysed includes 353 contributions on factors or statements. This dataset is described in Figure 2.2 by the distribution of contributions per HUL step, type of contribution, and scale. Although factors and statements were collected per each HUL step, statements prevailed for the step of "integrate." Most contributions of the participants did not refer to a specific scale ( $n = 268$ ), and only a small number of contributions explicitly referred to the city of Amsterdam, where one specifically addressed the Pakhuis de Zwijger.



**Figure 2.2.** Parallel sets chart describing the dataset of collected contribution based on the HUL steps, the type of contribution and the scale (created with rawgraphs.io).

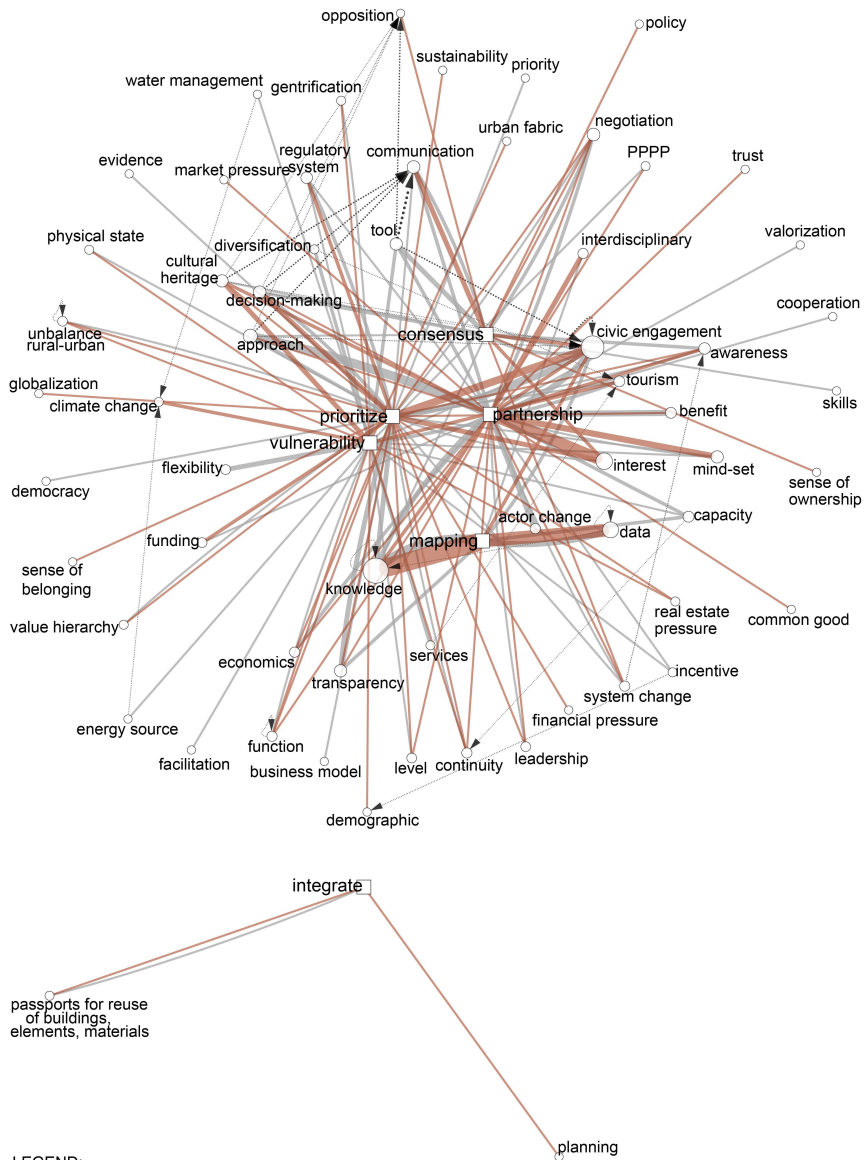
### 2.3.2 Factors

From the contributions, 61 themes and 250 attributed codes were deduced. About half of the themes entail both challenges and solutions ( $n = 29$ ), whereas 15 themes include contributions reporting only challenges and 17 only solutions. The results of this content analysis are illustrated in Figure 2.3 as a graph mapping the relationship among the themes—identified by coding the sample—and HUL steps.

While showing that certain themes, e.g., civic engagement, relates to various HUL steps, the graph also highlights the presence of relationships among themes. For example, several solutions suggest tools to solve challenges referring to civic engagement and communication issues. Similarly, opposition challenges could be addressed through strategies relating to “cultural heritage”—by providing evidence on the direct benefits of heritage reuse for the community—and to “approach”—by shifting from a narrative focused on a common past to one focused on a common future. In addition, “continuity” to the process of reuse could be ensured by providing “capacity” in terms of human resources. The graph, therefore, illustrates the presence of cross-relations among themes.

This graph counts two components since “integrate” entails themes unshared with any other HUL step (Figure 2.3). The component composed of most themes and HUL steps includes 17 themes that were mentioned in at least five (2%) contributions (Table 2.3). These themes are presented in detail in this manuscript. They refer to knowledge, civic engagement, interest, data, approach, communication, negotiation, decision-making, cultural heritage, tools, transparency, mindset, regulatory system, awareness, capacity, benefit, and tourism. To avoid repetition, the factors solely mentioning tools ( $n = 7$ ) are presented in the section “tools,” which maps the tools drawn from all contributions independently from their type.





LEGEND:

- Factor
- HUL step
- Challenge
- Solution
- ... solves ...

The size of the factor circle and the tickness of lines are directly proportional to the occurrence.

**Note:** The graph is two-mode, non-simple, and multi-edge, with loops represented. The prefuse force-directed layout uses the occurrence of contributions for each theme as the force. Nodes represent either themes or HUL steps. The edges tie themes and HUL steps and they can represent a challenge or a solution relation. Arcs, i.e., directed edges, connect the theme of a solution (the arrow origin) with the theme of a challenge tackled (the arrow target). Image created using Cytoscape v3.7.2. (Shannon et al., 2003).

**Figure 2.3.** Graph mapping the relation among the themes and HUL steps (67 nodes, 140 edges, and 25 arcs).

**Table 2.3.** Overview of the 17 themes more mentioned.

Theme	N <sup>1</sup>	Definition	Example of factor - for challenges and + for solutions
Knowledge	28	Understanding of and information about cultural heritage, adaptive reuse, and their context	- Lack of knowledge + Knowledge acquisition
Civic engagement	24	Adoption and implementation of participation processes of all sorts of stakeholders	- Lack of time and resource for participation + Use of ICT platforms to involve citizens
Interest	14	Concern for the process of adaptive reuse resulting from willingness of participation, or benefits/advantages foreseen or derived from this process	- Conflicting interest among actors + Ensure equity of roles among stakeholders
Data	13	Element collected to be used to inform a decision or a reasoning	- Data lacking structure, comparability, and interoperability + Interoperable and user-friendly platforms of open data
Decision-making	8	Process of making decisions	- Top-down decision making + Balance top-down and bottom-up decision-making
Approach	10	Ways adopted in dealing with and carrying on adaptive reuse of cultural heritage	- Competition within a sector + Future-oriented approach emphasizing the common future instead of the common past
Negotiation	8	Processes aiming at reaching some sort of consensus among parties	- Lack of mediation + External mediator/broker
Communication	8	Exchange of information among actors	- Jargon, e.g. lack of understanding of "cultural heritage" + Definitions and lay language

continue...

...continued

Theme	N <sup>1</sup>	Definition	Example of factor - for challenges and + for solutions
Cultural heritage	7	Recognition or management of cultural heritage	- Heritage is not a priority + Provide evidence of the usefulness of cultural heritage
Mentality	7	Demands for a shift of mind-set	- Risk adverse mentality fearing unknown + Promote flexibility by changing mentality through the third sector
Transparency	7	Clarity and access to information	- Mismatch expectation-outcome + Enhance transparency of processes and decision-making
Tool	7	Mention of a tool solely in the contribution	+ Business improvement districts to create partnerships
Awareness	6	Realization of a fact and concern about a situation	- Lack of awareness within the community + ICT play games to raise awareness
Regulatory system	6	Policy, frameworks, legislation, and regulations	- "Manipulation of legal framework for protection of heritage" + Regulation to allow experimentation in solutions/processes
Capacity	5	Capacity building	+ Building capacity to create "heritage brokers"
Benefit	5	Foreseeing and proving of benefits derivable from adaptive reuse of cultural heritage	- Lack of ability to foreseen distribution of impacts + Provide evidence of the potential benefits
Tourism	5	The system related to people visiting places	- Reuse of cultural heritage as touristic attraction provokes a loss of uses intended for locals + Conceive solutions working all year long and for both tourist and locals

<sup>1</sup> Number of contributions mentioning the theme

**Knowledge** encompasses factors relating to the understanding of and information about cultural heritage and adaptive reuse, and their context. Challenges referring to knowledge primarily mention the lack of knowledge, and secondarily the access to knowledge. Consequently, the solutions predominately refer to knowledge production and dissemination in terms of tools and needed information. The majority of challenges under this theme are experienced concerning "mapping." A challenge for the adaptive reuse of cultural heritage is identified in the lack of knowledge about both tangible and intangible attributes. At the tangible level, the absence of maps of vacant buildings is problematic for the city of Amsterdam and in general. At the intangible level, the lack of knowledge on "(...) values, perceptions, opinions," and on social issues is challenging. An example of such social issues is the needs of some age groups, such as children. In addition, challenges relate to confidentiality and access to knowledge, the knowledge gap between civic society and experts, and the time-consuming practice of acquiring information. Furthermore, the adaptive reuse of cultural heritage is negatively affected by the lack of knowledge on opportunities and possible solutions to create partnerships for such processes. Over half of the proposed solutions relate to knowledge acquisitions, e.g., by "mapping knowledge of society" and building a knowledge base via roundtables, focus groups, perception data collections, and ICT tools. Knowledge production and dissemination could also be achieved by building/sharing knowledge on "good practices" and "interdependences," as well as on best practices for prioritization and how this is done in other countries.

**Civic engagement** relates to the adoption and implementation of participation processes of all sorts of stakeholders (UNESCO, 2011b) concerned with the adaptive reuse of cultural heritage. This theme is the only one transversal to all HUL steps except for "integrate." The challenges about civic engagement address a variety of aspects of participation in the adaptive reuse of cultural heritage. These challenges span from civic engagement being considered a barrier to development projects to the lack of time and resources for participation. The adaptive reuse of cultural heritage faces a challenge in politicians' lack of acknowledging the value of these engagement practices. An additional barrier is encountered in identifying and including stakeholders. Similarly, for the city of Amsterdam, a problem is the limited representativeness of the citizens

willing to take part in the reuse of cultural heritage. The participating citizens are “only well-educated (...),” resulting in a “(...) low real engagement.” A further challenge is the lack of interaction between cultural heritage and “citizens,” which is also associated with their lack of involvement in mapping. Solutions mainly relate to providing tools and support for civic engagement. For instance, providing an ICT platform could enable citizen involvement in mapping. Analogously, digital platforms “(...) facilitate cooperation and empower the civil society.” Along with these digital tools, other solutions are based on participatory budgets dedicated to creating partnerships for heritage practices, “storytelling perceptive methods,” and participatory governance to reach consensus on actions and to prioritize for the adaptive reuse of cultural heritage.

**Interest** entails the concern for the process of adaptive reuse resulting in the willingness to participate, as well as the benefit or advantage foreseen or derived from this process. These factors are mainly associated with challenges as either lack of interest or conflicting and prevailing interests among actors. For example, these challenges are represented by clashing interests between the investors and the community/users, diverging interests among actors, and “prevailing of external agendas.” Concerning the lack of interest, this affects some “(...) sectors of society,” limiting the creation of partnerships for the adaptive reuse of cultural heritage.

**Data**, per two-thirds challenges, focuses solely on “mapping.” These challenges address predominantly the management of collected data. For instance, challenges are data interoperability, organization, and lack of structure. In addition, the lack of comparability among datasets prevents their use and reuse. Further challenges encompass the fragmentation of data, e.g., maps, among owners or responsible people and the expense of “time and effort” demanded to merge such data. This has been identified as occurring at the local, national, and European levels. Regarding data collection, the only challenge is presented by the attempt to perform such data collection using an integrated approach. Solutions mainly address the data management challenges by providing a framework for data acquisition and management, such as the adoption of a European standard for interoperability, and the use of open data platforms.

**Approach** means the ways adopted in dealing with and carrying on the adaptive reuse of cultural heritage. These factors are primarily solutions advocating for a change in strategies and perspectives towards a more collective and collaborative approach. The competitive attitude within a sector, the only challenge, hampers the creation of partnerships. Conversely, solutions entail sharing infrastructures, resources, and potential risks through partnerships. It is also suggested to favour placemaking, provide guidelines for changing approaches, and adopt a business model perspective also considering long-term investments and related returns. Moreover, a strategy to build consensus could adopt a future-oriented approach advocating for “a common future instead of a common past.” Other solutions propose the presentation of “(...) heritage as an opportunity” and the promotion of self-management, -organization, and -government.

**Decision-making**, evenly addressed as challenges and solutions, mainly relates to “prioritization.” This theme is mainly mentioned as top-down decision-making hampering the adaptive reuse of cultural heritage. Yet, other decision-making-related challenges are the municipalities prioritizing new developments over heritage reuse and decision-makers opting for simplified solutions to implementing sustainability instead of considering its complexity. To solve some of these challenges, a suggested strategy is to balance top-down and bottom-up decision-making and attempt to reach consensus also by performing multi-criteria decision analysis.

**Negotiation** broadly relates to processes aimed at reaching some sort of consensus among parties. Hence, this theme partially intertwines with decision-making and interest-related factors. Negotiation factors are slightly more associated with solutions, rather than challenges. The challenges refer to the lack of mediation for consensus and prioritization, as well as the lack of ways to reach agreements upon the allocation of limited resources in partnerships. Conversely, solutions propose involving mediators. These mediators are alternatively presented as brokers creating connections and as facilitators of the dialogue among stakeholders. For example, the “conservation specialists (...)” could act as “(...) mediators or brokers for the investors.”

**Communication** entails the exchange of information among actors. These factors are slightly more associated with solutions than challenges. The challenges relate to a lack of common ground among actors: Jargon is the main communication challenge. These jargon issues are twofold: Some concepts, such as cultural heritage, are not understood by some actors and other concepts are understood differently, e.g., "value." An additional challenge is posed by different communication systems such as languages. Solutions tackle the jargon issue, but also enhance the communication among actors and create narratives. Overcoming the communication challenges entails providing definitions and using plain language. For example, jargon can be avoided by formulating questions such as "what's the most important thing for you in the city?". Other solutions aim at enhancing the communication between decision-makers and the community by means of media coverage and creating new narratives.

**Cultural heritage** regards factors, mainly challenges, regarding the recognition of cultural heritage and its management. For example, cultural heritage is absent among the "(...) pressing issues." Other challenges are the recognition of informal heritage and the existence of "heritage restrictions (...)." An additional challenge is a little differentiation among cultural heritage sites, which makes it difficult to decide which to conserve. However, cultural heritage is included in a solution that proposes providing evidence of the usefulness of cultural heritage as a resource and an asset.

**Mindset** demands a shift in mentality. The related factors are prevalently concerned with the creation of partnerships. On the one hand, the challenges are conflict-prone mindset, risk aversion, and scepticism. On the other hand, it is stated that the entrepreneurs' mindset hinders the creation of partnerships for the adaptive reuse of cultural heritage. Hence, there is a need for "heritage entrepreneurs." In other words, there is a lack of entrepreneurs understanding the characteristics of cultural heritage. Other solutions propose the development of a "theory of «complementary»,” of a mindset refusing corruption and lack of transparency and flexibility brought on by the third sector.

**Transparency** refers to ensuring and enhancing clarity and access to information during the adaptive reuse of cultural heritage. This theme largely entails solutions linked to “prioritization.” Particularly, challenges lay both in the mismatch between expectations and what is performed as engagement and in the lack of clarity about who makes decisions. Transparency and its enhancement are solutions per se and build trust among actors.

**Awareness**, as the realization of a fact and concern about a situation, and in particular the lack thereof, was recognized as a challenge for the city of Amsterdam and in general. For example, this lack of awareness concerns both cooperation and investment opportunities. Raising awareness is a solution devised to reach consensus by also involving “community experts.” In the city of Amsterdam, awareness is lacking among the “community” hurdling the prioritization, which can be addressed by raising it through ICT and playing games.

**Regulatory systems**, including “legislative and regulatory measures” (UNESCO, 2011b), are mostly associated with solutions. However, challenges are present. In the city of Amsterdam, a need to reduce conflicting rules has been identified. General challenges entail the “vulnerabilities and manipulation of legal frameworks for the protection of heritage” and the impunity related to “prioritization” without further clarification. This barrier is solvable by providing preventive rules. Other solutions associated with legal frameworks are regulations that allow experimentation with “partnership” and multilevel regulations and legislation to address challenges.

**Benefit** entails the foreseen and the proving of benefits derivable from the adaptive reuse of cultural heritage. A challenge lies in the inability to foresee the distribution of benefits and impacts of reuse. Conversely, solutions for the creation of partnerships are based on providing stakeholders with both the understanding of potential benefits and evidence of effective benefits derived from the adaptive reuse of cultural heritage.



**Capacity-building** is a solution to work with communities and archives and needs to be increased with professionals dealing with “vulnerabilities.” Capacity-building is suggested for creating new professions, such as the “broker” active in the context of cultural heritage and its adaptive reuse.

**Tourism** is slightly more associated with solutions. Yet, within the city of Amsterdam, tourism is a challenge due to the vulnerability of the urban fabric to its impacts. In general, tourism is also associated with challenges such as seasonality and depriving the locals of uses dedicated to them by reusing cultural heritage as a tourist attraction. Therefore, to overcome these challenges, solutions need to be conceived as inclusive solutions that work all year long for both tourists and locals.

Additional themes were also identified (Figure 2.3). Being less mentioned, these themes generally entail factors less detailed than the ones already presented. These factors range from the definition of the function to be attributed to cultural heritage by its adaptive reuse to the lack of or the need to foster interdisciplinary approaches. Other examples entail costs, funding, and alternative currencies, such as tokens using blockchain to share the renewable energy produced at Ceuvel in Amsterdam (Spectral, n.d.). Additional factors address gentrification, public-private-people partnerships, and the need for system changes, e.g., heritage authorities assuming a proactive role during the planning phase. Furthermore, the adaptive reuse of cultural heritage is negatively affected by the lack of continuity at the political level. This challenge is the result of either political instability or a mismatch between the duration of political mandates and the timeframe to implement actions. This mismatch could be solvable by involving actors unrelated to political cycles in adaptive reuse.

### 2.3.3 Tools

Analysing the contributions, 43 tools were identified. These tools were clustered based on the four tool categories introduced by the 2011 UNESCO Recommendation on the Historic Urban Landscape (UNESCO, 2011b) (Table A.1) and cross-referenced with the type of contribution mentioning them (Figure 2.4).

Firstly, slightly more than a third of the mentioned tools are regulatory ones. Both the knowledge and planning tools and the financial ones represent a fourth, and the remaining sixth refers to civic engagement tools. The tools belonging to multiple categories are roundtable, focus

groups, and interviews; ICT platforms and tools; and participatory reformed policies. Secondly, 55% of these tools were associated with solutions, 10% with challenges, and the remaining with statements. Yet, material passports and regulations for materials were mentioned both in challenges and solutions. Thirdly, only the civic engagement tools are transversal to all HUL steps. Finally, concerning the city of Amsterdam, the tools reported as solutions are alternative currencies—specifically cryptocurrencies—and serious games, role-playing, and observation.

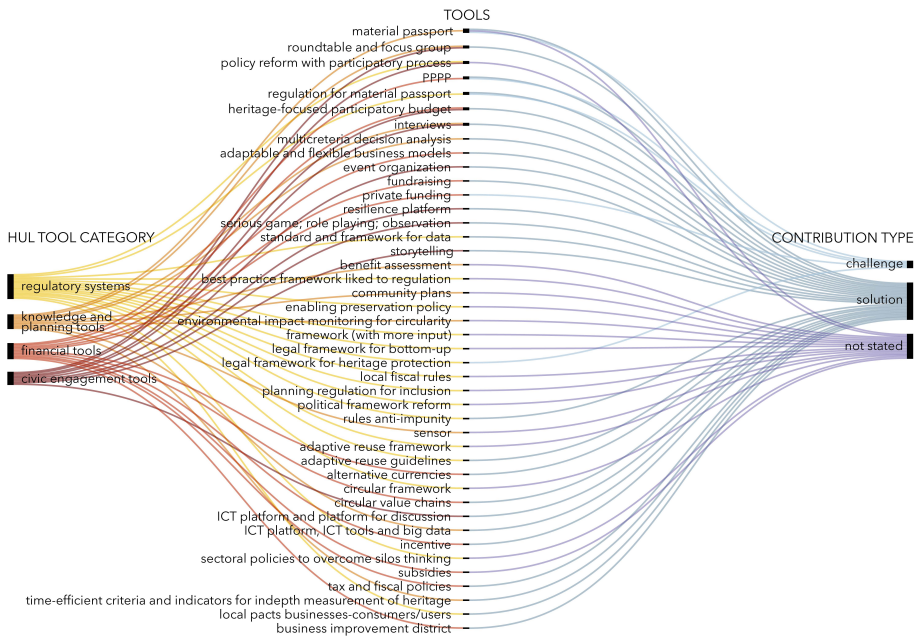


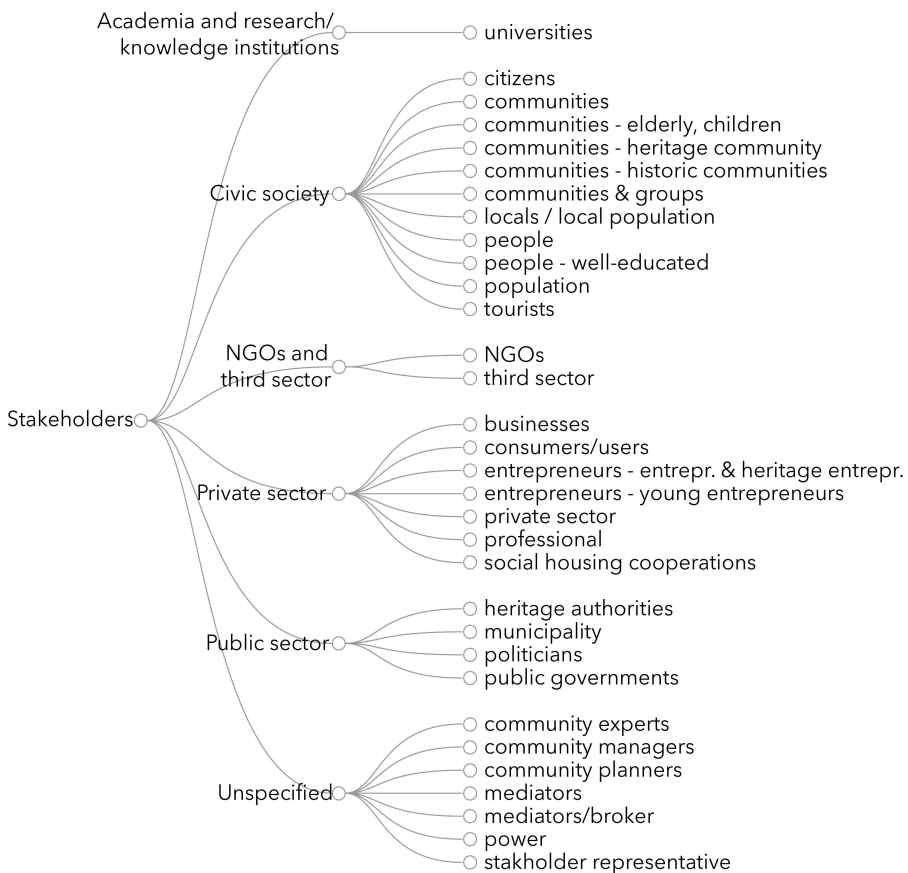
Figure 2.4. Parallel sets chart; tools identified in participants’ contributions per HUL tool category and type of contribution (created with rawgraphs.io).

Among the tools associated with solutions, some tackle a specific challenge. Roundtables and focus groups allow the lacking knowledge of communities’ experiences to be mapped. As for ICT platforms, they solve the lack of citizens’ involvement in mapping and problems with the interoperability of data when associated with open data. Furthermore, a strategy using interviews, multi-criteria decision analysis, serious games, role-playing, and observation could address that (i) “cultural heritage” is not a term in the public domain, (ii) concepts such as value and benefit

being differently understood by individuals, (iii) the public debate swinging because of public protests, (iv) and that politicians “are not convinced of the values of community engagement.” Turning to incentives, such tools were suggested to advert gentrification-induced person displacement.

### 2.3.4 Stakeholders

Several stakeholders were mentioned in the contributions who were classified based on an adapted Penta Helix taxonomy (Table A.1) (Calzada, 2013; Pentahelix project, 2018) as illustrated in Figure 2.5.



**Figure 2.5.** Dendrogram reporting the stakeholders identified in participants' contributions classified based on the Penta Helix taxonomy (created with rawgraphs.io).

Concerning the public sector, these actors are associated with challenges in the case of politicians doubting the value of civic engagement, governments lacking the sense of responsibility to act for the adaptive reuse of cultural heritage, and a “municipality prioritizing new development over heritage.” These stakeholders are associated with solutions as governments with a facilitating role and heritage authorities playing a “more proactive role” in planning the adaptive reuse of cultural heritage.

Among the private-sector stakeholders, a challenge is partnering with entrepreneurs when dealing with heritage reuse. Such a challenge is solvable by a new entrepreneurial figure: the “heritage entrepreneur” who is aware of heritage specificity, value, and potential. In addition, private actors encompass social housing corporations mentioned in a statement about gentrification. Solutions relating to private actors foresee collaboration with “young entrepreneurs,” the use of local pacts “between businesses and consumers/users,” and the involvement of professionals to decouple the implementation of adaptive reuse from the timeframe of political mandates. Particularly, these professionals would ensure continuity despite a possible change in the governing party.

As for civic society, overall, the challenges entail the lack of involvement of these stakeholders, their lack of awareness about cultural heritage, or the limited representativeness of participating stakeholders. A further challenge is the lack of knowledge of these stakeholders and their needs. In addition, a statement highlights the risk that tourists could potentially be the only beneficiary of the adaptive reuse of cultural heritage. Solutions mention the same actors listed for the challenges. The knowledge sector refers to universities as a solution advocating for collaboration with such institutions within the process of the adaptive reuse of cultural heritage.

NGOs could participate in the adaptive reuse of cultural heritage, ensuring the continuity of such processes over time. Furthermore, NGOs are presented as mediators between “public government and citizens” to reach consensus. As for the third sector, it appears in solutions as an introducer of a change of mentality and adaptability of plans. Finally, some stakeholders were not classified because they were identified by their role without further specification. These stakeholders, associated with solutions or statements, are the “community planner,” the “community

manager” to be involved in planning, the “external mediator broker,” the “community expert,” and the “representatives of stakeholders.”

## 2.4 Discussion

This research set out to provide a broad overview of challenges and to identify solutions to address them. Tools and stakeholders mentioned were also mapped. This overview contributes to starting to build a baseline for the adaptive reuse of cultural heritage, which could later be of reference to the formulation of relevant policies and strategies and inform the design and implementation of adaptive reuse. Evidence of the challenges and possible solutions is provided.

### 2.4.1 Factors

This research reports on the 17 most broadly identified themes and the related factors expanding the spectrum of challenges proposed by the literature. The factors presented go beyond the concerns about design, technical aspects, and compliance with legal requirements (Bullen & Love, 2011c; Sheila Conejos et al., 2016; Douglas, 2006). Even “regulatory systems” expand on the challenges related to legal requirements. For instance, the manipulation of the legal framework was identified as a challenge, whereas in literature the emphasis is on compliance with regulations, such as fire safety (Sheila Conejos et al., 2016). However, the present study also identified some of the challenges commonly reported in the literature, although they were less frequently mentioned and/or more generally formulated.

This difference in findings is likely related to the broadened variety of stakeholders and the methodology, set according to the study aim: a multi-scale identification as broad as possible of challenges and solutions to the adaptive reuse of cultural heritage. The framework of the investigation, i.e., HUL steps, might have induced participants to focus less on design and technical aspects by adopting an integrated and holistic perspective. Therefore, other aspects of adaptive reuse were revealed, e.g., civic engagement, negotiation, and tourism.

Furthermore, this difference in themes might also reflect the evolution in the understanding of both cultural heritage (Chris Landorf, 2009; Vecco, 2010) and adaptive reuse as well as the change in urban and heritage

2

management approaches (Bandarin, 2019). For instance, the potential of cultural heritage for sustainable development and circular economy is increasingly being acknowledged (Architects' Council of Europe, 2018; Council of Europe, 2005; *Davos Declaration 2018*, 2018; UNESCO, 2013). Similarly, the different thematic emphasis revealed by this research could be explained by the change in discourse in domains such as heritage and sustainable urban development (Bandarin, 2019; Spanish EU Presidency, 2010). For example, factors referring to civic engagement present increased discussion and articulation probably due to the rising interest in participatory practices in heritage management (Li et al., 2020). Additionally, a growing interest in the practising of adaptive reuse might have triggered measures and spread coping strategies that made both design and technical aspects and legal requirements less regarded as challenges. Likely, these aspects were also mentioned to a limited extent because of the participants' background: Few architects were presented, and no engineers joined the workshop. Finally, the practice of cultural heritage adaptive reuse embeds the changes occurring in the built environment, such as "new participatory design principles, new models for (public) investment, and new societal needs" (Plevoets & Van Cleempoel, 2019, p. 110), a dynamism that is reflected in the emergence of new challenges and solutions for adaptive reuse.

Moreover, reflecting the integrated, holistic, and multi-scale approach incorporated in the methodology, the results reveal the complexity of the adaptive reuse of cultural heritage and its interconnection with the urban ecosystem where it occurs. Therefore, this approach shifted the framework used to investigate adaptive reuse by expanding the focus from the building or site to also considering the urban scale. An example of such interconnection and shift is the theme of tourism. In general, tourism can be a source of revenue to financially sustain the operative phase of reuse (Tourism & Transport Forum Australia, 2017; Yung & Chan, 2012). Nevertheless, the reuse of cultural heritage solely as a tourist attraction can deprive the locals of uses dedicated to them and could negatively impact urban liveability. Furthermore, the city of Amsterdam is a popular touristic destination that is (perceived to be) facing over-tourism and where the negative impacts of tourism can outweigh the positive impacts (Gerritsma, 2019; Koens et al., 2018; Municipality of Amsterdam, 2019), in pre-COVID-19 pandemic conditions when the study was performed. For instance, participants identified tourism as a threat to the urban fabric of the city and,

therefore, its cultural heritage. Besides, a general challenge for the adaptive reuse of cultural heritage is posed by the seasonality of tourism (Butler, 2001). Such an articulated problem could be addressed by proposing a program of adaptive reuse that considers both the tourists and locals, and that works all year long. Hence, some challenges identified are not specific to the adaptive reuse of cultural heritage, but rather are common to heritage reuse and other phenomena such as tourism.

### 2.4.2 Tools

By listing the tools mentioned in the contributions, this study offers a toolkit to address some of the challenges encountered in the adaptive reuse of cultural heritage and highlights which tools are associated with challenges. Although some of these tools were already reported in the literature, in the present study, they sometimes appeared for different purposes. For example, to adverse negative gentrification induced by adaptive reuse, incentive schemes were identified to retain the population related to the cultural heritage, whereas they were mentioned as a driver for adaptive reuse in previous studies (Bullen & Love, 2011c).

### 2.4.3 Stakeholders

An overview of stakeholders is provided. The civic society was identified with several different terms, e.g., "citizen," "residents," and "locals." However, the analysis failed to reveal the difference between them. The results also suggest that NGOs and the third sector are gaining a role in the adaptive reuse of cultural heritage, as mediators or providers of continuity to this process. Yet, they were absent among the actors previously identified among the decision-makers for the adaptive reuse of cultural heritage (Damla Mısırlısoy & Günce, 2016). In addition, the findings suggested that stakeholders are changing their roles: Local governments are becoming facilitators rather than decision-makers (Damla Mısırlısoy & Günce, 2016). This facilitation role could be symptomatic, reflecting the strong (inter)national promotion and dissemination of participatory and bottom-up practices in heritage management (Council of Europe, 2005; Court & Wijesuriya, 2015; UNESCO, 2011b).

Furthermore, the stakeholders mentioned in the contributions are varied and partially differ from the ones involved in the literature to identify challenges for adaptive reuse, suggesting that broadening up the variety of these identifiers better reflects the variety of actors involved in the adaptive reuse of cultural heritage. Specifically, the literature prevalently considered the perspective of architects and project managers (Bullen & Love, 2011c; Sheila Conejos et al., 2016; Dyson et al., 2016) as well as owners (Bullen, 2007; Dyson et al., 2016; Shipley et al., 2006), and to a lesser extent developers (Bullen & Love, 2011b; Shipley et al., 2006), local authorities (Bourne, 1996; Shipley et al., 2006), building managers (Bullen & Love, 2011b), heritage consultants, inhabitants, or bankers, financial institutions, and investors (Shipley et al., 2006). Conversely, in the contributions analysed, architects, project managers, developers, owners, and building managers were seldom referenced. Yet, these actors might be the ones generically indicated or mentioned by their role—for instance, the “professionals” who could decouple the implementation of adaptive reuse from the timeframe of political mandates. Possibly, the difference in stakeholders could also be explained by the shift from solely considering the building to also including a multi-scale approach in the roundtable discussion.

#### 2.4.4 Limitations and outlook

Almost 75% of the contributions lack an explicit indication of a scale likely because participants implicitly assumed it to be the city of Amsterdam and the adaptive reuse of cultural heritage in this context, i.e., the focus of the data collection. Yet, performing the manifest content analysis, this lack of indication drove us to assimilate these contributions to general ones. In this regard, future research could confirm the applicability of these factors to the urban or site scale, or both. Despite this limitation, this research offers some evidence of the challenges and possible solutions for heritage reuse in the city of Amsterdam. Besides, the general factor might apply to a wider context. For the case-specific factor, they are likely to be transferable to similar local contexts. Additional analyses should further detail and advance the understanding of such factors and their relationship with their context, the wider context—such as other regions—and transferability. Similarly, an additional case study analysis is needed that considers more examples of adaptive reuse within the city of



Amsterdam, and stakeholders to refine the overview provided in this research.

The solutions reported in the study were derived from the analysis of the participants' contributions during the HUL workshop. Therefore, these solutions have either already been applied in other adaptive reuse practices, drawn from other domains, or proposed by the participants. To develop a full picture, future studies, such as case studies, will be needed to investigate these solutions, and their feasibility, applicability, and generalizability.

This study starts to create a baseline that needs to be further developed. The structure of the workshop allowed for a contextual validation of the results by the participants. However, repeating the study and engaging a higher number of stakeholders would allow the present results to be refined and their contextualization to the city of Amsterdam to be fostered. Particularly, some participants in the workshop were citizens representing other categories of stakeholders, hence, it is likely that the civic society perspective had limited representation. Because of this limitation and based on the results about civic engagement, future research is advised to investigate factors involving a broader representation of civic society. Furthermore, a bias might be present, despite the presence of facilitators in the roundtable discussion, due to the sample of participants, their personal biases and needs, and discussions sometimes steered by anchoring themes addressed at length by more vocal participants.

The present findings offer an overview of factor variety without attempting to explain these factors in-depth. Some contributions were also ambiguous or statements. Furthermore, although enriching the factor identification, the participants' multidisciplinary and variety of backgrounds might have introduced uncertainty in the use of jargon and lay language. To account for these terminology and linguistic issues, (i) a peer debriefing of the explicit content analysis was conducted (Table A.1), with the main author acting as a coder and a co-author as peer reviewer (Janesick, 2015); (ii) terms that were afferent to the same phenomenon or domain were clustered when developing the themes; and (iii) the participants' wording was often used in reporting the results to stay close to the content of the contributions (Bengtsson, 2016). Future research is advised to (i) deepen the understanding of the identified factors, unpacking and differentiating where the present study clustered; (ii) verify

if the statements refer to challenges or solutions; and (iii) compare the present findings with the results of other European projects investigating the adaptive reuse of cultural heritage.

Concerning the tools and stakeholders revealed in the contributions, future research is needed since this study solely related them to challenges and solutions. Further investigation could explore the inclusion of these tools in the HUL toolkit, contributing to its localization in the city of Amsterdam—the context in which they were identified. Additional research could also elucidate the differences in stakeholders mentioned in the contributions and the ones commonly involved in literature to identify challenges.

## 2.5 Conclusive remarks

These findings have key implications for future practice, decision-making, and policy-making. Firstly, this investigation informs on the current state of the art of challenges both to future decision-making and policy-making related to the adaptive reuse of cultural heritage. Secondly, this research raises awareness of the challenges through an evidence-based empirical approach. Finally, besides knowledge and evidence, this study offers advocates and practitioners a set of solutions and tools that can address or be further developed to overcome such challenges. Therefore, the findings favour a transition towards a proactive approach in developing the adaptive reuse of cultural heritage. This facilitation could foster its diffusion, thus prolonging the lifespan of cultural heritage, integrating climate change adaptation, and raising awareness about adaptive reuse and its role in circular cities and sustainable urban environments. On the one hand, this diffusion could result in the inclusion of heritage and its reuse in visions of circular cities. On the other hand, this diffusion would contribute to the transition of human settlements towards circular economy and sustainable development, enhancing the liveability of urban environments under the strain of climate change, urbanization, and related challenges.

This chapter has identified the challenges encountered in the adaptive reuse of cultural heritage in the city of Amsterdam and proposed solutions. It presents in detail challenges and solutions relating to the 17 mostly mentioned themes. Some of the detailed themes refer to knowledge, civic engagement, interest, data, and decision-making. It expands the range of issues already presented in the literature. For example, challenges stem from lack of knowledge for the adaptive reuse of cultural heritage such as the absence of maps about vacant heritage sites. The findings demonstrate that engaging a wide variety of stakeholders and adopting a multi-scale perspective in this identification broadens the spectrum of challenges associated with heritage reuse. Tools and stakeholders associated with these challenges and solutions were also mapped, providing reference to actors dealing with such processes, e.g. citizens, policy-makers, and decision-makers. For example, ICT-related tools are mentioned as solutions to address Knowledge-, participation-, and data-related challenges. Some stakeholders mentioned in relation to challenges and solutions are absent from the stakeholders of the adaptive reuse of heritage mentioned in the literature (e.g. Damla Mısırlısoy & Günce, 2016). Examples of these stakeholders are representatives of knowledge and research institutions and brokers. Further studies and cases are needed to further explore challenges, and solutions, for cultural heritage adaptive reuse engaging a broad variety of stakeholders within a European context. In the following chapter, a similar methodology is applied to identify challenges and solutions in the second case study, the southern-Europe city of Salerno, Italy.



## Chapter 3

# Cultural heritage adaptive reuse in Salerno: Challenges and solutions

This chapter is adapted from:

Pintossi, N., Ikiz Kaya, D., Pereira Roders, A. (forthcoming)  
Cultural heritage adaptive reuse in Salerno: Challenges and solutions.

The dataset analysed in this chapter is deposited at  
<https://10.5281/zenodo.3925602>.

This chapter provides an overview of challenges and solutions identified in the second of the three case studies considered in this dissertation, i.e. the city of Salerno, Italy. Moreover, the chapter offers an in-depth presentation of the challenges and solutions referring to the five most mentioned themes: knowledge production and management, participation, valorisation, approaches, and cooperation.

**Abstract:** The adaptive reuse of cultural heritage contributes to heritage conservation, leveraging the heritage potential to enable sustainable development and enhance urban liveability. Yet, it is seldom applied as an intervention. This research furthers the knowledge about the challenges to the adaptive reuse of cultural heritage. Through the case study of Salerno (Italy) and a participatory methodology, this research organized a stakeholder engagement workshop, facilitating the interaction of stakeholders—representing the public, private, civic, and knowledge sectors, while using a theoretical framework based on the six steps of the UNESCO Historic Urban Landscape approach to adopt a multi-scale perspective. The content analysis of the data reveals 55 themes identified as challenges and solutions. These themes are presented in a general overview, followed by an in-depth reporting of the five most discussed themes, i.e. knowledge production and management, participation, valorisation, approaches, and cooperation. Besides the contribution to science, this research also offers an overview of challenges and possible solutions for prospective stakeholders in the adaptive reuse of cultural heritage, informing future decision- and policy-making activities towards greater sustainable development.

### 3.1 Introduction

Cultural heritage is today recognized as an enabler and driver for sustainable development (United Nations (Habitat III), 2017; United Nations General Assembly, 2015) and urban regeneration (Plevoets & Van Cleempoel, 2019; Throsby & Petetskaya, 2021), contributing to enhancing urban liveability while maintaining urban identity (CHCfE Consortium, 2015b; C.-S. Chen et al., 2018; Guzmán et al., 2017). However, cultural heritage can only contribute to sustainable development when conserved. Adaptive reuse is a category of intervention that has proven to not only conserve cultural heritage, but also generate cultural, economic, environmental, and social benefits (Architects' Council of Europe, 2018; Sheila Conejos et al., 2014; Fuentes et al., 2015; Galdini, 2019; Gravagnuolo et al., 2021; Heath, 2001; Heller, 2016; Kee, 2019; Plevoets & Sowińska-Heim, 2018; Szopińska-Mularz, 2021; United Nations (Habitat III), 2017). Adaptive reuse also entails challenges hampering its adoption and implementation, "especially when it pertains to heritage" such as lack of skilled tradesmen for the preservation works and dealing with the social values attributed (Sheila Conejos et al., 2016, p. 508).

Even if challenges to the adaptive reuse of cultural heritage have been identified in previous studies (see Table 3.2), further research is needed. Firstly, to consider the "views of other stakeholders (other than architects)" (Sheila Conejos et al., 2016, p. 517). Secondly, to focus on properties and urban areas formally or informally recognized as heritage, hence accounting for heritage specificity, i.e. its values and significance (Bullen & Love, 2011b; Sheila Conejos et al., 2016). Thirdly, to scrutinize adaptive reuse practices in varied geographical contexts, possibly suggesting solutions as Conejos and co-workers (2016).

The present research—part of the CLIC<sup>2</sup> project—aims at contributing to identifying the challenges to the Adaptive Reuse of Cultural Heritage (ARCH) and possibly solutions to address the challenges, using the city of Salerno in Italy as case study.

Hence, the research questions addressed are: What are the challenges affecting cultural heritage adaptive reuse? How to overcome these challenges? To identify these challenges and solutions, a wide variety of

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<sup>2</sup> Circular models Leveraging Investment in the Cultural heritage adaptive reuse.

stakeholders participated in a stakeholder engagement workshop and assessed the ARCH in the city of Salerno from a multi-scale perspective. As a result, not only the findings provide evidence of these ARCH challenges and solutions, but also, they expand the related knowledge. Furthermore, this overview of challenges can promote the development of evidence-based solutions and inform future policy-making realizing the potential for sustainability embedded in the ARCH through its facilitation in this local context and similar ones.

## 3.2 Background

This research relies on six key concepts: namely, cultural heritage, adaptive reuse, challenge, solution, factor, and stakeholders. These concepts are defined in Table 3.1. Notably, cultural heritage encompasses the category of “built heritage”. The present research refers to the “built cultural heritage” as “cultural heritage” instead of “built heritage” because, at times, this latter category is defined based on a narrow spectrum of values (Tweed & Sutherland, 2007), whereas the heritage under scrutiny encompasses a spectrum of phenomena beyond “buildings”, such as its intangible dimension and the landscape.

Table 3.1. Key concept definitions.

Concept	Definition
Cultural heritage	“... resources inherited from the past which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. It includes all aspects of the environment resulting from the interaction between people and places through time.” (Council of Europe, 2005, article 2).
Adaptive reuse	Process that “extends the building’s [or properties] physical and social functions by giving the building a new purpose while conserving its historic and cultural significance” (Sheila Conejos et al., 2016, p. 508)
Challenge	Negative factors that are challenges, barriers, obstacles, hurdles and constraints that hamper the process, i.e. adaptive reuse of cultural heritage (Eisenack et al., 2014)
Solution	Positive factors that allow to overcome challenges
Factor	Identified element that can be either a challenge or a solution
Stakeholders	Actors that are involved in the process of adaptive reuse of cultural heritage



### 3.2.1 Identification of challenges to the adaptive reuse of cultural heritage

Previous studies have already reported challenges encountered in the adaptive reuse of buildings (Bullen & Love, 2011b; Sheila Conejos et al., 2016; Douglas, 2006; Remøy & Van Der Voordt, 2014; Yung & Chan, 2012) and urban areas (Fernandes et al., 2020; Steinberg, 1996). From these studies, the two categories of “major challenges experienced by experts” in practices of adaptive reuse have been defined as the “compliance with codes and regulations” and the “current design requirements” (Sheila Conejos et al., 2016, pp. 516–517). Both these two categories encompass a wider variety of issues (Table 3.2). Furthermore, the studies conducted within the CLIC project also identified obstacles in developing a local action plan for the ARCH. These obstacles are the “lack of funding, regulatory gaps, the scarce interest of administrations, bureaucratic procedures too long and complex, lack of interest and participation of the local community, high level of decay of the cultural heritage, uncertainty of politics, lack of communication” (Garzillo et al., 2018, p. 21).

Despite the recommendations in policy and examples from practice, the existing research on challenges in the ARCH so far focused on specific groups of stakeholders (Sheila Conejos et al., 2016), scope, and geographical settings. While the stakeholders participating in adaptive reuse projects are users, producers, investors, and regulators (Ferretti et al., 2014; Damla Mısırlısoy & Günce, 2016; Wang & Liu, 2021), the literature mostly addresses producers such as architects and project managers (Bullen & Love, 2011c; Sheila Conejos et al., 2016; Dyson et al., 2016), and neglects users and investors (Council of Europe, 2005; C. Landorf, 2019; Li et al., 2020). Moreover, there is little emphasis on the need for integrated and holistic approaches which are advised in managing cultural heritage (UNESCO, 2011b), nor is cultural heritage the main focus of research on adaptive reuse. Yet, cultural heritage poses specific challenges to adaptive reuse (Bullen & Love, 2011b; Sheila Conejos et al., 2016), as determining compatible new uses while averting the undermining of heritage significance. Most challenges have been identified focusing on the site scale, i.e. buildings and urban areas, without considering the urban scale. Most research either used case studies in Oceania, North America, and Asia (Bullen & Love, 2011d; Sheila Conejos et al., 2016; Elrod & Fortenberry, 2017a) or specific typologies of heritage within Europe, e.g. industrial and engineering heritage (Laconte, 2014).

Further research can broaden the state-of-the-art and the understanding of challenges in the ARCH concerning the variety of stakeholders, its scope and the geographical settings considered.

**Table 3.2.** List of challenges for adaptive reuse reported in the literature.

Challenge	References
Availability of reliable information	(Sheila Conejos et al., 2016)
Availability of skilled craftsmanship and materials compatible with the original ones	(Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016)
Compliance with safety requirements	(Aigwi et al., 2018; Sheila Conejos et al., 2016; Douglas, 2006)
Conflict with the local community about the new uses of the heritage	(Elrod & Fortenberry, 2017a)
"Continuity of local community life"	(Yung & Chan, 2012, p. 358)
Economic viability and costs	(Douglas, 2006; Fernandes et al., 2020; Shipley et al., 2006; Tan et al., 2018; Yung & Chan, 2012)
Handling of contaminations and hazardous materials	(Clark, 2013; Douglas, 2006; Hetteima & Egberts, 2020; Remøy & Van Der Voordt, 2014; Tan et al., 2018; Vrusho & Pashako, 2018)
Minimization of change	(Mehr et al., 2017; Shipley et al., 2006; Yung & Chan, 2012)
Obtainment of the approval of the change of use	(Sheila Conejos et al., 2016; Douglas, 2006; Elrod & Fortenberry, 2017a; Langston & Shen, 2007; Wilkinson et al., 2014)
"Physical restrictions" (e.g. the structural grid)	(Sheila Conejos et al., 2016, p. 509; Giuliani et al., 2018; Mehr et al., 2017)
Political circumstances	(Bourne, 1996; Steinberg, 1996)
Prevention of values loss	(Mehr et al., 2017; Shipley et al., 2006; Yung & Chan, 2012)
Status of physical decay	(Douglas, 2006; Dyson et al., 2016; Remøy & Van Der Voordt, 2014)

Note: Douglas address adaptive reuse in general instead of focusing on heritage (2006). Remøy & Van Der Voordt incidentally address formally recognized heritage (2014).

### 3.3 Methodology

The methodology aims at i) harvesting knowledge from a broader range of stakeholders; ii) using a landscape-based approach; iii) focusing on the adaptive reuse of cultural heritage; iv) adopting a multiscale perspective; and v) analysing a European case study.

#### 3.3.1 Participants

The identification of challenges and solutions (collectively referred to as “factors”) involved a broader group of stakeholders: hoping to gather a wider variety of factors, eventually contradicting or complementary (Eisenack et al., 2014).

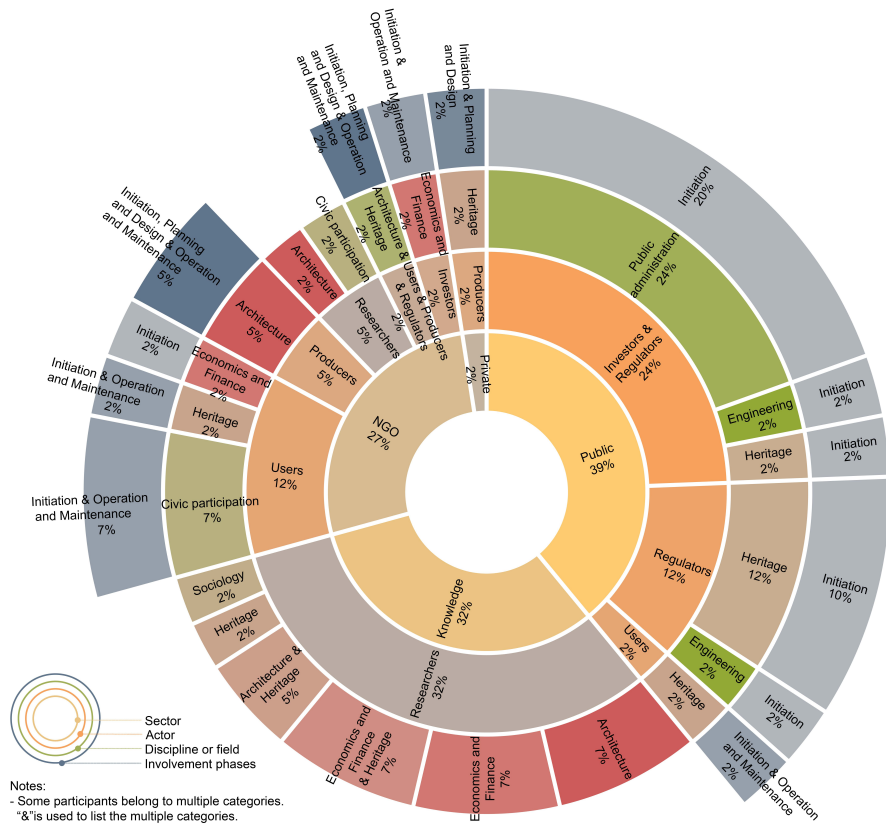


Figure 3.1. Characteristics of the workshop participants.

Participants were sampled purposively and opportunistically (Baker & Moncaster, 2018). To ensure a multi-disciplinary discussion for this identification, stakeholders attending the workshop represented a variety of backgrounds in terms of expertise, profession, and experience with the ARCH. About 41 participants contributed to the roundtable discussion, supported by six facilitators. They represented 23 separate local, national, and European organizations and institutions. Most participants were representatives of the public sector, e.g. Municipality of Salerno and the peripheral office of the Ministry of Cultural Heritage and Activities and Tourism responsible for heritage; national and international researchers; and NGOs, such as local associations managing Salernitan heritage buildings (see Pintossi & Ikiz Kaya, 2020). Figure 3.1 details the characteristics of the participants based on the sector, actor (D Mısırlısoy & Günçe, 2016), and discipline that they represented. For the non-researcher participants, the chart also indicates in which phases of the adaptive reuse process they were/ are mainly involved (Geraedts & Wamelink, 2009; Martani, 2015). As the figure suggests, most participants are involved in the initiation phase of the reuse process, whereas there is a lack of representation of stakeholders engaged in the construction phase.

### 3.3.2 Case study

The city of Salerno, with about 140,000 inhabitants, is the capital of the province of Salerno in southwestern Italy, on the Gulf of Salerno. It is composed of the layering of different time periods, as the mediaeval, the 19<sup>th</sup>-century, and the post-war areas (Comune di Salerno, n.d.-c). Along with the new constructions by renowned architects, the city counts several historic palaces, gardens, religious buildings, archaeological sites, and museums; some of which are listed as local or national heritage (Comune di Salerno, n.d.-a). Although few heritage-designated areas and buildings are vacant (Lupacchini, 2020), since the 90s, the historic centre has been requalified with interventions of restoration and adaptive reuse, such as Giardino della Minerva.

Giardino della Minerva (Minerva's Garden) is a former 13<sup>th</sup>-century physic garden reused as a botanical garden with a herbal tearoom and a nursery. The garden is owned by the Municipality of Salerno and managed by the

foundation “Salernitan medical school” (Fondazione “*Scuola medica salernitana*”) (Consiglio Comunale di Salerno, 2007). The physic garden, the first in Europe, was created by an exponent of the Salernitan medical school—among the most long-standing medical universities in the world—for educational activities (Capone, 2010; Comune di Salerno, n.d.-b; MP Mirabilia Srl, n.d.). Also, Giardino della Minerva presents architectural elements added in the 17<sup>th</sup> century, such as the monumental stairs (MP Mirabilia Srl, n.d.). Being a significant “place of memory” and “uncommon beauty” and counting around 50,000 visitors per year, Giardino della Minerva is an exemplar case of adaptive reuse in Salerno (*Benvenuto Al Giardino Della Minerva*, n.d.; Bohigas & Puigdomenech, 2005; Capone, n.d.; Mauro, n.d.), reason of its selection as site case for the present research.

### 3.3.3 Data collection

The workshop was structured adapting the World Café method (Brown et al., 2005), a participatory method to directly investigate the ARCH engaging the people in identifying challenges, based on their experiences and knowledge (Bergold & Stefan, 2012). The World Café “builds on the notion of group intelligence. By organizing several discussion rounds (...) enables bringing together individual ideas into one comprehensive message”, harvesting “information from a broader perspective” (Brouwer & Brouwers, 2017, p. 37), while motivating participation by facilitating mutual learning and relationship building among participants (Löhr et al., 2020). This method has proven useful in identifying barriers, opportunities, design requirements, and potential research areas in various domains such as health, organization development and ecosystem management (Broom et al., 2013; Kavanagh et al., 2020; Palacios-Agundez et al., 2013; Silva & Guenther, 2018). Notes taken by the facilitators were analysed. The notes reported the participants’ contributions, validated by the participant multi-disciplinary teams in roundtable discussions. To ensure a holistic and integrated perspective (Ginzarly et al., 2019) this investigation used the six steps of the HUL approach (HUL step-s) (UNESCO, 2011a; Loes Veldpaus, 2015) as the assessment framework (see Table 3.3). An approach that “integrates distinct theoretical perspectives, which are usually discussed separately, to address the complex layering of various aspects of the landscape” (Ginzarly et al., 2019, p. 2).

**Table 3.3.** Six steps of the HUL approach used as theoretical framework.

Full description	Keyword
Map cultural, natural, and human resources	Mapping
Reach consensus on values and related attributes to protect	Consensus
Assess the vulnerability to change and development of the values and attributes to protect	Vulnerability
Integrate the values, the related attributes, and their vulnerabilities in the urban development framework	Integrate
Prioritize actions for conservation and development	Prioritize
Establish (local) partnerships and management frameworks per each of the actions	Partnership

Note: The description of the HUL steps is adapted from UNESCO (2011a), Veldpaus et al. (Loes Veldpaus et al., 2013), and WHITRAP & City of Ballarat (2016) as in Pintossi et al. (2021a).

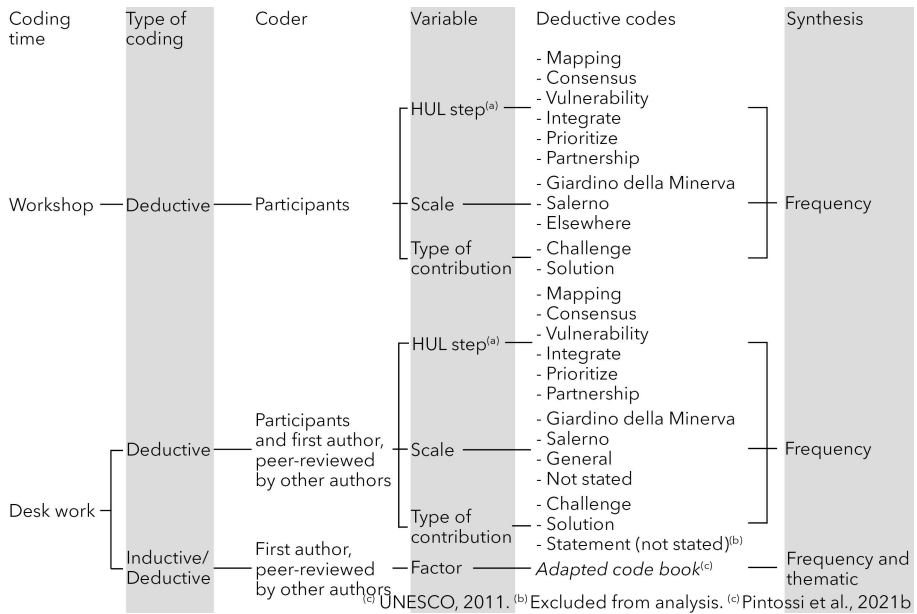
The adoption of this holistic and integrated perspective allows to assumingly identify a wider variety of factors. On the one hand, being holistic, this perspective considers the various dimensions of cultural heritage, e.g. tangible and intangible (Ginzarly et al., 2019). On the other hand, being integrative, it acknowledges the interdisciplinary nature of heritage and adaptive reuse, the latter entailing conservation, architecture, engineering, and urban planning (Ginzarly et al., 2019; Plevoets & Van Cleempoel, 2019; UNESCO, 2005). Furthermore, the HUL steps guide the implementation of the HUL approach for instance in defining action plans for conservation and management of historic urban landscapes, e.g. HUL workshop in Zanzibar (Tanzania) to identify the “the activities needed for better integration of planning and conservation” (Van Oers, 2013, p. 68). This research is novel to implement the HUL steps, successfully used in developing conservation and management processes at the local level, to reveal challenges and potential solutions of interventions such as adaptive reuse. Each roundtable focused on one HUL step while discussing with a multi-scale focus on i) Giardino della Minerva at the site scale, ii) the city of Salerno at the urban scale (hereinafter Salerno), and iii) other scales or contexts indicated as “elsewhere”, to reflect “how measures taken at the building level impact up to a global level” and vice versa (The 100 Resilient Cities in Wilkinson, 2018, p. 6).

### 3.3.4 Data analysis

All notes were transcribed and prepared to be analysed (Zenodo: 3925602), translating Italian contributions to English and excluding notes that were neither challenges nor solutions. After this first step, the corpus undergoing content analysis included 609 contributions. This corpus was inductively and deductively coded performing a manifest analysis (Figure 3.2) (Krippendorff, 1980). Particularly, the coding scheme applied during the HUL workshop was corrected to better reflect the content of the collected data. Furthermore, the inductive coding of the factors adapted the codes used by Pintossi and co-workers (2021b). Afterwards, the results of this coding were reported by a frequency and thematic synthesis (Bengtsson, 2016; Krippendorff, 1980; Thomas & Harden, 2008). When reporting the results, the contributions without a “scale”, i.e. those named “not stated” (Figure 3.2) were also classified as “general”.

## 3.4 Results

From the 609 contributions, representing 326 challenges (54%) and 283 solutions, it can be observed (Figure 3.3) that a fourth of these contributions was produced while discussing the HUL step “prioritize”. Concerning scale, the distribution of the contributions referring to “vulnerability” and “integrate” tend to be evenly distributed. Conversely, the contributions about “prioritize” refer mostly to Salerno and “general”, while the ones about “partnership” to Giardino della Minerva and Salerno, whereas the subsets concerning “mapping” and “consensus” omitted the related scale (Figure 3.3). Hence, at the level of Giardino della Minerva and Salerno, addressing challenges in “prioritization” and “partnership” would significantly impact the facilitation of the ARCH.



Note: the deductive coding during the roundtables reflects the workshop structure: participant unconsciously coded by indicating the type of contribution and its scale while discussing a specific HUL step in each roundtable discussion.

Figure 3.2. Content analysis (adapted from Krippendorff, 1980): coding process and analysis techniques.

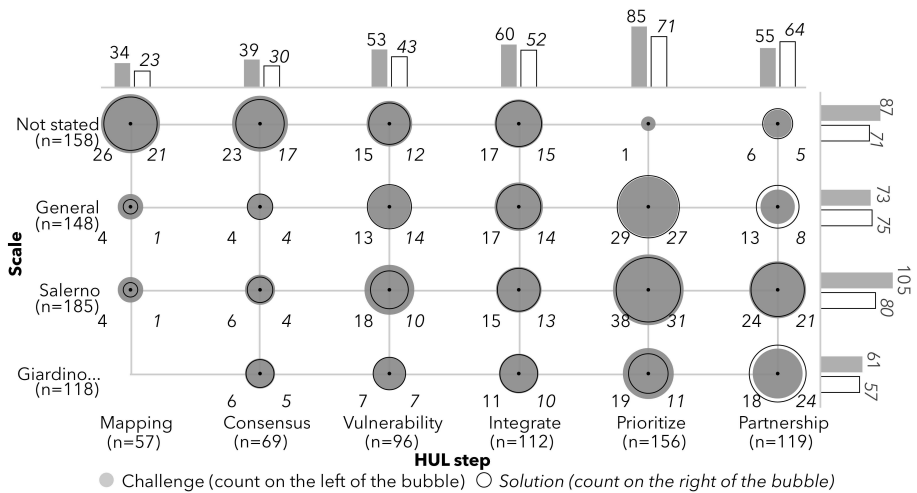


Figure 3.3. Overview of the dataset analysed per HUL step, scale, and type of contribution. (Initial draft of the figure created using rawgraph.io).



### 3.4.1 Overview of the 55 themes

Fifty-five themes were identified, entailing 633 code labels applied, and excluding 8 contributions due to being incomplete or undecipherable, such as the potential solution: “roots museum” (Figure 3.4). When relating the themes to the HUL steps and the “solution-challenge” it can be concluded that awareness-related and system change-related solutions address challenges associated with “continuity”, which are encountered in activities related to “prioritize” and “vulnerability” (Figure 3.4). Besides visualizing the wide variety of themes encompassing challenges and/or solutions, such a broad overview evidences the complexity underlying the system of factors identified while assessing the ARCH. Among these 55 themes identified, the 5 mostly mentioned are knowledge (n = 62), participation (n = 43), valorisation (n = 37), approach (n = 36), and cooperation (n = 33).

This research revealed a system of interconnected factors underlying the ARCH. The graph in Figure 3.4 shows that, within the relations challenge-solution, some themes are connected to several others. For example, “knowledge” is connected with 12 other themes. In addition, challenges referring to themes such as “capacity and skills” can count on solutions from multiple themes, i.e. “decision-making”, “mind-set”, and “knowledge”. Moreover, solutions such as the ones related to “provide evidence of the benefits” are linked to challenges referring to various themes, e.g. “awareness” and “cultural heritage”. Hence, it is found a widely diversified spectrum of thematic relationships among factors. Only the factors relating to issues about “accessibility and access” lack challenge-solution relations outside the theme itself. Moreover, the identified system of challenges includes some factors, pertaining to the same theme, that relate to multiple HUL steps. These factors are, therefore, transversal to different activities of the reuse process. For example, “transparency and legality”, as the lack of transparency, is encountered in “mapping”, “consensus”, and “partnership”.

### 3.4.2 In-depth account of the five most mentioned themes

The five mainly addressed themes are knowledge, participation, valorisation, approach, and cooperation. Figure 3.4 shows that factors relating to knowledge, participation, and approach were identified discussing all six HUL steps, whereas valorisation factors are absent from



**Table 3.4.** Summary of challenges and solutions for the five most mentioned themes of factors.

Theme	Description	Challenges	Solutions
Knowledge	Factors concerning the understanding of information directly and indirectly related to the ARCH and its setting	Lack of knowledge Difficulties in knowledge dissemination Difficulties in knowledge production Loss of knowledge	Knowledge production Knowledge dissemination Knowledge sharing Acquiring "know-how"
Participation	Factors relating to stakeholders engaging with the ARCH	Implementation of participatory practices Lack of participation	Civic engagement Co-planning Inclusion, e.g. young people
Valorisation	Factors referring to actions aiming at either increasing or communicating some value	Lack of valorisation Creation of networks Creation of networking activities	Creation of networks for valorisation Valorisation activities and events Diversification of the valorisation activities
Approach	Factors mentioning how the ARCH and related processes are or could be implemented	Need for a change of approach Implementation of existing and new approaches	Shift in the approach New approaches Cross-sectoral exchange
Cooperation	Factors mentioning stakeholders working together in a shared effort, mostly implying the common benefit of such collaborations	Initiation of collaborations Implementation of cooperation Lack of cooperation among certain actors Fragmentation of collaborations	Cross-sectoral cooperation New forms of cooperation Broaden the range of actors

Note: Table 3.4 omits the challenge-solution relations which are reported in subsections 3.4.2.1 to 3.4.2.5.

### 3.4.2.1 Knowledge

Factors referring to knowledge concern the understanding of information directly and indirectly related to the ARCH and its setting. On the one

hand, challenges (n = 23) are mostly mentioned as lack of knowledge (n = 6) followed by difficulties in its dissemination (n = 5) and production (n = 3), as well as the problem of its loss (n = 3). On the other hand, most solutions relate to knowledge production (n = 23) and, to a lesser extent, to knowledge dissemination (n = 11).

Firstly, the multifold challenges relating to knowledge entail its lack as the absence of understanding of the potential of Giardino della Minerva and Salerno. In general, this difficulty also relates to ignoring the "potential of spaces" to be reused, the "value of cultural heritage" for young people, and the needs of various stakeholders, e.g. "locals". Secondly, challenges concern the dissemination of information. For example, knowledge exchange is lacking concerning "best practice" both in Salerno and in general. Salerno also encounters difficulties in disseminating and recovering "memory", especially about the intangible asset of the Salernitan medical school. This could be overcome by including pre-agreements on recovery and dissemination for interventions on cultural heritage, a regulatory-related solution. Thirdly, despite relating mostly to solutions, knowledge production also poses challenges such as the demand for information about the ownership of heritage assets. Finally, a challenge common to all scales mentions the potential "loss of memory" due to the change in the "community" composition. To avert its loss, the memory relating to Giardino della Minerva shall be transmitted through education activities in schools.

Knowledge is also mentioned in solutions. For Salerno, knowledge production includes mapping cultural heritage assets; collecting memories of local people in an "archive of local stories" to address the "lack of common interest/vision"; and gathering "good practices in the cultural scope" in a platform to contrast the lack of sharing of information among the organizations in the city. In general, knowledge production provides overviews of the current status of the cultural heritage sector, investment opportunities, funding, stakeholders' needs, and "experiences". An example of such a solution is inventorying "potential investment opportunities and (...) investors" at the European level. Other solutions either advocate for information dissemination or propose strategies to transmit "memory" and knowledge. For Giardino della Minerva, this entails disseminating its multiple, layered narratives. Similarly, within Salerno, this dissemination concerns the achieved results to ensure the long-term implementation of current strategies for heritage

and tourism, addressing potential problems of continuity derivable from changes induced by political cycles. Acquiring knowledge about “know-how” and from national and international experts overcomes the challenges associated with involving “the local community in the maintenance (...) of the garden”. Similarly, it is suggested sharing knowledge about NGOs and internationalization. Finally, other solutions to disseminate knowledge are gamification for the cultural heritage assets of Salerno and, in general, the provision of “a space for the exchange of ideas and knowledge” and an “open public dissemination”.

#### 3.4.2.2 Participation

The category “participation” entails factors relating to stakeholders engaging with the ARCH, such as future citizens. These factors (n = 16) mostly refer to the implementation of participatory practices. Besides, challenges also mention the lack of participation (n = 6) either in general or referring to specific stakeholder groups, whereas “civic engagement” is a shared (n = 5) solution.

Challenges relating to participation are encountered at all scales. For Giardino della Minerva, the lack of participation entails the exclusion of citizens from “the process” and the absence of “co-planning”. Both challenges might be solvable by implementing participatory practices through co-planning. Furthermore, the citizen exclusion is addressable by organizing events aiming at their involvement. An additional challenge for the garden concerns how to engage “locals” in “prioritization” and “partnership”. This challenge is also identified at the level of Salerno. Also, the absence of dialogue with politicians, who “need citizens’ opinion”, revealed it as extremely difficult. According to the general contributions, the lack of participation entails both the absence of representation, e.g. of future citizens such as children, and of a public sector that does “not allow engagement” without further detailing it. General challenges to the implementation of participatory practices span from the absence of references on approaches for citizens’ participation to the lack of influence by the results of the participatory processes on the final outputs of the decision-making. The “lack of bottom-up initiatives”, the difficulty encountered in understanding “when to involve people”, and the absence of participatory tools and governance are a few of the many eminent challenges.

Besides the solutions already mentioned, a few more embed participation. For Salerno, the “local community” shall contribute through participatory planning to develop a local action plan also considering sustainable tourism. Additional solutions for Salerno include improving public consultations, which form the basis to prioritize actions according to participants, and making “the citizens part of the heritage conservation”. At the general level, solutions mostly relate to the implementation for “consensus” such as carrying participatory practices out involving stakeholders from sectors other than the cultural heritage.

For the implementation of these practices, it is suggested to mix innovative and traditional approaches, designate a coordinator, and build platforms that support dialogue -including citizens and young people- while providing a channel of communication between the local authorities and the civic society. It is also suggested to start with “stakeholder involvement” from the beginning of the ARCH process and it is recommended for private initiatives particularly engaging “local stakeholders and local government”.

#### 3.4.2.3 Valorisation

Valorisation refers to actions aiming at either increasing or communicating some value. These factors, generally more associated with solutions rather than challenges, often include activities such as promotion (n = 10) and networking (n = 9). Valorisation is also mentioned as a challenge when lacking (n = 3), and as a solution when it entails diversification (n = 3).

Among the challenges, promotion issues are common to both Giardino della Minerva and Salerno. For example, the site lacks the valorisation of its cultural value, which could be promoted by a devoted network to communicate this value. In terms of the City, valorisation is needed to attract tourism and foster economic development. For Giardino della Minerva, the valorisation through networking embeds a twofold challenge: creating an international network to exchange knowledge and increase its leverage and opening the garden up to the city through networking activities. Particularly, this second activity is perceived as a potential threat to the preservation of the garden identity despite addressing the complaints about its “closure”. Also, at the level of Salerno, a challenge entails the development of a network to communicate the existing offer of events about culture and heritage. Other challenges associated with the valorisation of Giardino della Minerva relate to

conveying its value to tourists without a guide, promoting the interventions carried on within the garden to a broader audience, and deciding between the current single-narrative valorisation and its diversification through multiple ones.

Solutions refer to valorisation from the local scale up to the international one. For example, solutions promote Giardino della Minerva, its values, and its activities among residents and tourists by organizing events, including the garden in itineraries, partnering with associations with similar interests such as the one of independent farmers (*Coldiretti*). Also, the interaction of Salernitans with the garden could be encouraged by introducing incentives such as discounted tickets. Solutions concerning Salerno mention “lobbying at the international level” to address the perceived absence of international investors in the city, and networking to valorise the heritage of the city. Another example of a solution is provided by the valorisation of “minor sites” helping to solve a general threat such as over-tourism which could be faced by Giardino della Minerva due to the increasing number of visitors. Moreover, the diversification of the valorisation associated with Giardino della Minerva is suggested by offering a program that addresses the various dimensions of this heritage overcoming the challenge of identifying what is considered heritage in the garden and by whom.

#### 3.4.2.4 Approaches

Approach factors mention how the ARCH and related processes are or could be implemented. These factors, featuring 22 solutions and 14 challenges, predominantly mention a need for a change as a challenge (n = 7), and shifts in approach or introducing a new approach itself as solutions (n = 7).

Challenges mainly report difficulties in current approaches or in implementing new ones. For example, in Salerno, the current prevalence of traditional financing models is regarded as a challenge to the current ARCH practices, which could be overcome by improving the governance of this reuse. In addition, general challenges demand a change of approach as considering “cultural heritage maintenance and sustainable development” as conflicting as well as performing restoration works without a preliminary analysis but overlooking providing details on this analysis. These challenges are respectively solvable by adopting “innovative (technological) solutions for energy efficiency, etc.” and by

changing approaches and setting “priorities”. Other challenges mention the lack of application of the existing principle of horizontal subsidiarity for Giardino della Minerva and the current management approach to adaptive reuse intervention within Salerno lacking a “strategy for management and uses” often resulting in vacancy shortly after the finalization of the reuse interventions. This challenge could be addressed by looking at other sectors’ solutions and consulting “with different actors/stakeholders”. Additional examples of challenges are the difficulty of integrating cultural heritage in smart specialization plans and the lack of planned maintenance. This second issue is solvable by developing plans for this purpose at the level of the historic urban landscape as well as specific ones for monuments.

Besides the solutions already mentioned, others entail the introduction of new innovative models for Giardino della Minerva, to address issues related to its financial viability, and the opening of “the management programme of the heritage to new propositions” overcoming its extreme specialization. Furthermore, to advert the disneyfication (Kennedy & Kingcome, 1998) of Salerno, it is suggested to adopt an integrated approach not only focusing on tourism but also considering other uses when reusing heritage also interlinking the city with its wider territory and specialities such as the Mediterranean diet. Similarly, in general, an integrated approach is proposed for “territorial development” with cities leading and receiving benefits from it. An additional general solution tackles the absence of tools for participation and governance for the ARCH by cross-sectoral learning and exchange.

#### 3.4.2.5 Cooperation

Contributions about cooperation mention stakeholders working together in a shared effort, mostly implying the common benefit of such collaborations. These factors are more associated with solutions (n = 21) than with challenges (n = 12). Particularly, solutions often report examples of existing cooperation and prospected one (n = 6), also within other sectors, such as the association of independent farmers (*Coldiretti*) which partnered with the city hospital and other stakeholders to produce locally sourced olive oil.

Challenges relating to cooperation often refer to the difficulty of initiating and implementing such collaborations as involving high profile NGOs in partnerships for Giardino della Minerva. Furthermore, this difficulty is also



generally present in cooperation between local authorities and the Ministry of Culture represented by its peripheral offices. Improving the “dialogue” between these different government levels would solve this last challenge. Furthermore, in Salerno, a barrier is also represented by the fact that the peripheral office mainly collaborates with public authorities rather than with the other stakeholders involved in the ARCH. For Salerno, an additional barrier reports the lack, fragmentation, and limitation of cooperation among its cultural organizations which could be addressed by gathering both “good practices in the cultural scope” through a platform and initiatives from the community under a “community brand”.

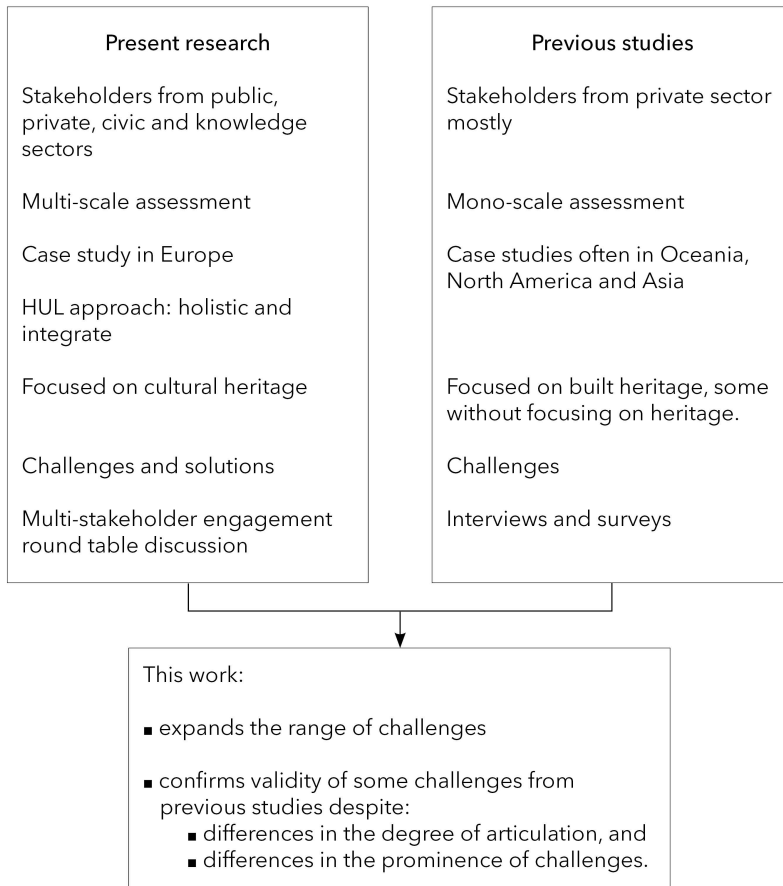
Solutions concerning cooperation suggest teaming up with knowledge institutions such as universities to address issues related to Giardino della Minerva, e.g. recovering an intangible asset of the garden like the “memory” associated with it. Other solutions for Giardino della Minerva include collaborating with “many actors” as working with artists to “emphasize the historic story of the garden” through “modern stories”. A similar general solution entails “to dialogue with other stakeholders” and find “new ways” for implementing it to address the challenge posed by a cultural heritage sector tending towards isolation.

### 3.5 Discussion and Conclusions

Through stakeholder engagement, this research revealed the challenges encountered in the ARCH and solutions to overcome them within a European setting as Salerno (Italy). This research confirms and expands the range of challenges discussed in the literature (Figure 3.5). New challenges are:

- the lack of knowledge about the needs of stakeholders,
- the limited dissemination of best practices for and of approaches for citizens’ participation in the ARCH,
- the recovery and dissemination of “memory” and the prevention of its loss,
- the lack of co-planning in relation to participation,
- the lack of engagement or representation of certain groups in the process of the ARCH,
- the absence of bottom-up initiatives,
- the valorisation of values,
- the development of networks for valorisation and dissemination,

- the limitation of current approaches to the ARCH and the difficulty of implementing new ones,
- the initiation and implementation of collaborations, and
- the lack of cooperation among certain stakeholders.



**Figure 3.5.** Summary of the contribution to existing knowledge.

Moreover, further main contributions of the present research can be highlighted. Firstly, these findings further detail the challenges reported in the literature. For instance, lack of community participation (Garzillo et al., 2018) is specified as the lack of representation of specific groups, such as young people. Secondly, the participants in the HUL workshop seldom mentioned challenges such as the state of decay or the design and technical aspects (Bullen & Love, 2011c; Sheila Conejos et al., 2016;

Douglas, 2006). Finally, the five themes detailed were seldom mentioned in the literature.

These differences are likely to be related to the context of the research, i.e. the participatory approach, and to the geographical setting. After all, these contributions were made within the framework of an HUL-based, multi-scalar approach for the identification of challenges and solutions, considering a botanical garden as a site case, instead of buildings. Moreover, a broader variety of stakeholders was involved in this identification with respect to previous studies. Possibly, a further context-related explanation of these differences lies in the constant evolution in the conservation and management of cultural heritage (Akagawa, 2018; Pereira Roders, 2019; Smith, 2012; Vecco, 2010). For example, discussions on the role of community in heritage management are gaining attention and being further researched (Li et al., 2020; Rosetti et al., 2020). This evolution might be reflected in a shift into the discourse that is echoed in the participants' contributions. Future research could further investigate not only if these thematic differences concern the case study of Salerno or entail a more general shift in the themes associated with the challenges encountered in the ARCH today, but also, the inter-relation of these themes with cultural democracy.

Overall, this research points out the need for a systematic, cross-sectoral approach in the ARCH which also consider the ARCH not as an isolated process but integrated into the wider urban (or rural) system. Firstly, themes are intertwined (Figure 3.4). This intertwining suggests that a solution while overcoming a specific challenge can also address other challenges. For example, solutions fostering the dissemination of knowledge, such as "open public dissemination" also address the lack of transparency of processes, being "transparency" one of the 55 themes. Secondly, challenges and solutions are non-exclusive to the ARCH. They also relate to other processes, e.g. participatory practice in general or heritage climate adaptation, and intersect with sectors other than the culture and heritage sectors, e.g. tourism and economic development. For example, knowledge transfer is a challenge encountered in the ARCH as well as in heritage climate change adaptation (Sesana et al., 2019). Hence, this non-exclusive nature of some challenges and solutions suggests that the present findings can have implications besides the ARCH such as informing community-led heritage management. Future research is advised to further investigate the systemic nature of these challenges and

solutions, explore a systemic, cross-sectorial approach to overcome the challenges of the ARCH, and study the cross-sectoral relations of some of these challenges.

This research also found that some challenges are common to multiple scales, such as the “loss of memory”. Despite reflecting the landscape approach adopted in the research, which consider the complex layering of various aspect constituting the landscape, this finding suggests the possibility of intervening at multiple levels in addressing this sort of challenges. Furthermore, this multi-scale suggests that policies focusing on one level might favour others at the same time, and that solutions verified for one scale might be adjusted and viable at others. Therefore, a holistic and integrated approach such as the landscape approach might be adopted to address the multi-scale issues revealed by the present research. Such a hypothesis demands additional research.

Moreover, future research could further scrutinize the factors here identified. Gathering additional details would provide supplementary and lacking information. This information would help to both better comprehend these factors and provide further evidence to inform policy-makers and decision-makers supporting their activities in relation to the ARCH and urban regeneration. On the one hand, some contributions lack the necessary detail to either be addressed or implemented. For example, identifying the specific preliminary analysis needed before restoration would tackle the challenge identified in current approaches to restoration, whereas the contribution omits such information. On the other hand, the terminology is ambiguous in some contributions. This terminology issue is due to the participation of multidisciplinary stakeholders, speaking a non-native language, and potentially understanding technical words in different ways. In reporting the results, the wording used by participants has been preferred to acknowledge this issue. However, such future research is needed to provide clarity, such as identifying the stakeholders constituting the “community” or “local people”. In sum, the exploratory research presented aimed at identifying the challenges of the ARCH and solutions, rather than in-depth analysing them. For such an in-depth understanding, future research might scrutinize a limited number of challenges to examine them fully by drawing either from the collective intelligence of participants using a methodology like the one used in this dissertation or from the individual knowledge using other methods, e.g. in-depth interviews.

This study revealed challenges to the ARCH for the city of Salerno, and it proposed solutions to address them. These factors related to 55 themes, being the 5 most addressed knowledge, participation, valorisation, approaches, and cooperation. Assessing the ARCH from a multi-scale perspective was proven useful to the integration of policies and decision-making. Compared to earlier research, results extended the range of challenges, with a shift of emphasis towards factors such as participation and valorisation. Results also confirmed factors such as availability of skilled craftsmanship, conflict about new uses of heritage, economic viability and costs, legal and regulatory constraints, political circumstances, and status of physical decay.

The present research had a horizontal and exploratory intention which presents certain limitations. First, the findings are dependent on the workshop participants' experiences and opinions and the context considered, i.e. Salerno. Second, the findings lack an in-depth analysis of each challenge and solution due to the exploratory nature of the research. Third, the finding reflects a specific timeframe, i.e. when the data collection was held. Challenges and solutions change over time since they are dependent on dynamic settings and stress events (Eisenack et al., 2014), such as the COVID-19 pandemic. Therefore, further research could focus on i) identifying challenges and solutions engaging other stakeholders, ii) scrutinizing other geographical contexts, iii) understanding in-depth the challenges, also, relating them to the type of stakeholders experiencing them, iv) investigating the solutions and their implementation, and v) making an overtime analysis of challenges to reveal their potential evolution.

This research offers an informative overview for policy- and decision-making as well as practitioners and other interested parties on adaptive reuse of cultural heritage, but also heritage management. Another practical implication of this research is that it provides evidence of challenges reported by a variety of stakeholders while also suggesting solutions to address them. Therefore, policy-makers and decision-makers can refer to this evidence and knowledge to facilitate the adaptive reuse of cultural heritage in Salerno and similar contexts, in order to harvest its potential for maintaining urban identity, enhancing urban liveability as well as enabling and driving sustainable urban development.

This chapter has identified the challenges encountered in the adaptive reuse of cultural heritage in the city of Salerno and proposed solutions expanding the range of issues already presented in the literature. Challenges and solutions related to the five most discussed themes, namely, knowledge production and management, participation, valorisation, approaches, and cooperation. Examples of challenges expanding the range presented in the literature are the lack of knowledge about the needs of stakeholders and the limited dissemination of best practices for and of approaches for citizens' participation in the adaptive reuse of cultural heritage. The findings demonstrate that engaging a wide variety of stakeholders in this identification broadens the spectrum of challenges associated with heritage reuse. It is likely that this broadening is also due to the adoption of a multi-scale perspective. Additional studies and cases are needed to further explore challenges, and solutions, for cultural heritage adaptive reuse engaging a broad variety of stakeholders within a European context. In the following chapter, a similar methodology is applied to identify challenges and solutions in the second case study, the post-industrial port city of Rijeka, Croatia.

## Chapter 4

# Assessing cultural heritage adaptive reuse practices: Multi-scale challenges and solutions in Rijeka

This chapter is adapted from:

Pintossi, N., Ikiz Kaya, D., Pereira Roders, A. (2021) Assessing Cultural Heritage Adaptive Reuse Practices: Multi-Scale Challenges and Solutions in Rijeka. *Sustainability*, 13(7), 3603. <https://doi.org/10.3390/su13073603>.

The dataset analysed in this chapter is deposited at <https://10.5281/zenodo.4518743>

This chapter provides an overview of challenges and solutions identified in the third of the three case studies considered, i.e. the city of Rijeka, Croatia. Specifically, the chapter presents in detail the challenges relating to the most mentioned themes, i.e. participation, capacity, regulatory systems, economics-finance, and knowledge. Afterwards, the chapter briefly reports some solutions.

**Abstract:** Cultural heritage is recognized as a driver and enabler for sustainable development, and its role within the circular economy and circular cities is gaining attention. Its adaptive reuse plays a significant role in this while prolonging the heritage lifespan, preserving the values associated with heritage assets, and creating shared values. The adoption and implementation of the adaptive reuse of cultural heritage practices present challenges at multiple levels. This research aims to identify these challenges and propose solutions to overcome them, considering the post-industrial port city of Rijeka, Croatia, as a case study. The adaptive reuse of cultural heritage practices was assessed through a stakeholder engagement workshop performing a multi-scale analysis using the Historic Urban Landscape approach as an assessment framework. Forty-nine themes were identified by content analysis of the challenges and solutions identified by stakeholders involved in adaptive reuse practices and decision-making in the city. The five most mentioned themes refer to aspects relating to participation, capacity, regulatory systems, economics-finance, and knowledge. These findings provide evidence of challenges for policy- and decision-makers to be addressed in policy-making. Solutions are also suggested to facilitate the adaptive reuse of cultural heritage in the city of Rijeka and similar contexts, such as introducing policies to support participatory decision-making whose absence is a barrier.



## 4.1 Introduction

Resource scarcity, rapid urbanization, and climate change threaten ecosystems and human wellbeing. These threats challenge the liveability of human settlements (UNDESA, 2018; United Nations (Habitat III), 2017). To tackle these threats, sustainable development (*Report of the World Commission on Environment and Development: Our Common Future*, 1987) and a transition toward a circular economy are seen as crucial (Ellen MacArthur Foundation, 2019; European Commission, 2015)—the circular economy includes processes of production and consumption that minimize environmental impacts and waste production by extending the lifespan and reducing the consumption and waste of products and materials (Foster & Kreinin, 2020), while “creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations” (Kirchherr et al., 2017, p. 225). Furthermore, to address the threats posed by resource scarcity, rapid urbanization, and climate change, the built environment is a key sector to act on. In fact, the built environment consumes about half of the materials extracted every year, and it is responsible for nearly 40% of energy-related carbon dioxide (CO<sub>2</sub>) emissions (Ellen MacArthur Foundation, 2019; UN Environment and International Energy Agency, 2017).

Within the built environment, cultural heritage is receiving attention because it is recognized as a driver and enabler for sustainable development (*Davos Declaration 2018*, 2018; Guzmán et al., 2017; UNESCO, 2013; United Nations (Habitat III), 2017) and a key to ensure urban liveability (Berg, 2017; United Nations General Assembly, 2015). Cultural heritage consists of non-renewable resources inherited from past generations that express people’s values, knowledge, and traditions (Council of Europe, 2005). Over time, heritage broadens from the concept of “monument”—object-based, top-down, static, and prescriptive—to “cultural heritage”—process-based, also bottom-up, dynamic, and an expression of values and “social choice” (Akagawa, 2018; Bandarin, 2019; Smith, 2012; Tweed & Sutherland, 2007; van Oers, 2015; Vecco, 2010). Along with this evolution, the intangible dimension of heritage gained recognition and the range of categories of heritage expanded (Pereira Roders, 2019; Vecco, 2010). For these reasons, “cultural heritage” is preferred here to “built heritage.” This choice of terminology avoids the limitation of the investigation to narrower possible definitions of built

heritage that disregard its intangible dimension (Tweed & Sutherland, 2007). Reflecting the expansion of the concept of cultural heritage, heritage management shifted toward being understood as a “management of change” (Bandarin, 2019; UNESCO, 2011b), opening up to a wider variety of stakeholders and disciplines (C. Landorf, 2019), and recognizing a plurality of heritage practices and approaches (Australia ICOMOS, 2013; ICOMOS, 1994; Vecco, 2010). Particularly, Bullen and Love pointed out that the role of conservation has shifted from preservation toward “being part of a broader strategy for urban regeneration and sustainability,” which demands broad participation and interdisciplinarity (Bullen & Love, 2011b, p. 411). Hence, conserving both tangible and intangible heritage plays a role in sustainable development (CHCfE Consortium, 2015b; Council of Europe, 2014; Chris Landorf, 2009; Yung & Chan, 2012).

In parallel to sustainable development, the role of cultural heritage within the circular economy is gaining attention. Particularly, its adaptive reuse is regarded as “the entry point for implementing the circular city,” i.e., “the spatial/territorial aspects of circular economy” (Fusco Girard, 2019) (p.245). Adaptive reuse of cultural heritage is defined as the process that conserves heritage by providing the site/building with a new function (Bullen & Love, 2011b; Sheila Conejos et al., 2016). Thus, adaptive reuse extends the life cycle of heritage (Douglas, 2006; Foster, 2020). This extension aligns with the circular economy goal of reducing environmental impacts by reusing resources over time (Ellen MacArthur Foundation, 2016; Homrich et al., 2018). Furthermore, the adaptive reuse of cultural heritage can implement circular models in its management, such as circular business and governance models (Bosone et al., 2019; Foster, 2020; Fusco Girard, 2020; Ruba et al., 2020), and include nature-based solutions, e.g., rainwater reuse (Foster, 2020).

Previous research has found that the adaptive reuse of cultural heritage can contribute to sustainable development (S Conejos et al., 2014; Rodwell, 2007). This contribution is due to its environmental (Bullen & Love, 2010; Foster, 2020; Mohamed et al., 2017), social (Architects’ Council of Europe, 2018; Elrod & Fortenberry, 2017b; Giuliani et al., 2018; Yung et al., 2014), cultural (Architects’ Council of Europe, 2018; Sheila Conejos et al., 2016), and economic (Bullen & Love, 2011b; Mohamed et al., 2017) benefits when negative impacts, such as unplanned gentrification, are averted (Plevoets & Van Cleempoel, 2019). Examples of

these benefits are conserving the embodied energy, bypassing the waste production associated with demolition (Bullen & Love, 2010; Yung & Chan, 2012), and retaining tangible and intangible values of cultural heritage (Architects' Council of Europe, 2018; Australia ICOMOS, 2013; C.-S. Chen et al., 2018). Besides these benefits, at the local level, the adaptive reuse of cultural heritage can promote climate change mitigation within the built environment by integrating climate mitigation and adaptation strategies (Sheila Conejos et al., 2016; Fatorić & Egberts, 2020; Foster, 2020). Due to these benefits, the adaptive reuse of cultural heritage can contribute to the achieving of sustainable development and circular cities (Architects' Council of Europe, 2018; Foster & Saleh, 2021a; Fusco Girard, 2019; Plevoets & Van Cleempoel, 2019; Tam & Hao, 2019).

Even though previous research has indeed identified the potential of the adaptive reuse of cultural heritage for sustainable development, it has also found that these reuse practices face several challenges (Bullen & Love, 2011c; Sheila Conejos et al., 2016; Olivadese et al., 2017; Yung & Chan, 2012). Here, "challenges" are understood as all the factors hampering these heritage reuse processes, i.e., negative factors including barriers, obstacles, and constraints. Previous studies identified the challenges to the adaptive reuse of cultural heritage, mainly from the perspective of architects and project managers (Table 4.1). Overall, these challenges can be categorized as "compliance with codes and regulations" and "current design requirements" (Sheila Conejos et al., 2016, p. 508).

This limitation of stakeholders in past research indicates the need to engage a broad variety of actors in identifying these challenges (Sheila Conejos et al., 2016). Thus, it can be assumed that a multi-stakeholder perspective may result in a wider range of recognized issues, reflecting the plurality of experiences and perspectives considered, which is limited in the literature. Second, research on the adaptive reuse of cultural heritage has identified challenges focusing on the site-scale, i.e., buildings and areas. Nevertheless, measures taken on other scales also impact the site, and adaptive reuse is not limited to individual sites (Galdini, 2019; Wilkinson, 2018). Therefore, challenges to the adaptive reuse of cultural heritage might also be found at higher levels, such as the urban scale. Third, it is important to consider the relationships existing between heritage and its context (Australia ICOMOS, 2013) and to acknowledge the need for a holistic approach to heritage conservation (Ginzarly et al., 2019; UNESCO, 2011b). Limitations in the stakeholders involved and the scales

considered suggest the need for further research on factors hampering the adaptive reuse of cultural heritage.

**Table 4.1.** Challenges to the adaptive reuse of cultural heritage as defined in the literature.

Challenge	Reference
Availability of reliable information	(Sheila Conejos et al., 2016)
Availability of skilled tradesmen and compatible materials	(Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016)
Compliance with codes and regulation requirements	(Aigwi et al., 2018; Sheila Conejos et al., 2016)
Conflict with the local community about the new uses of the heritage	(Elrod & Fortenberry, 2017a)
“Continuity of local community life”	(Yung & Chan, 2012)
Effective and appropriate community engagement opportunities	(Yung & Chan, 2012)
Economic viability and costs	(Fernandes et al., 2020; Shipley et al., 2006; Tan et al., 2018; Yung & Chan, 2012)
Handling of contaminations and hazardous materials	(Clark, 2013; Hetteema & Egberts, 2020; Tan et al., 2018; Vrusho & Pashako, 2018)
Identification of the new function	(Plevoets & Van Cleempoel, 2019)
Minimization of change	(Mehr et al., 2017; Shipley et al., 2006; Yung & Chan, 2012)
Obtainment of the approval of the change of use	(Sheila Conejos et al., 2016; Elrod & Fortenberry, 2017a; Langston & Shen, 2007; Wilkinson et al., 2014)
“Physical restrictions” (e.g., the structural grid)	(Sheila Conejos et al., 2016; Mehr et al., 2017; Plevoets & Van Cleempoel, 2019)
Political circumstances	(Bourne, 1996; Steinberg, 1996)
Prevention of values loss	(Mehr et al., 2017; Shipley et al., 2006; Yung & Chan, 2012)
Status of physical decay	(Dyson et al., 2016; Remøy & Van Der Voordt, 2014)
Stigma associated with the building/site/area	(Wilkinson, 2014a) <sup>1</sup>

<sup>1</sup> Discussing adaptation of buildings in general without focusing on heritage reuse.

This research, therefore, aims to identify the challenges to the adaptive reuse of cultural heritage including these three aspects. In particular, it aims to identify these challenges by engaging a broad variety of stakeholders, considering a multi-scale perspective, and using the Historic Urban Landscape approach as a framework for the identification. For this

identification, a case study, i.e., the port city of Rijeka, is analysed. This European post-industrial city is re-developing into a cultural city and urban tourist destination by implementing an urban regeneration program focusing on heritage conservation and adaptive reuse. Hence, this study answers the following research question: What are the challenges to cultural heritage adaptive reuse identified by stakeholders at the urban and site scale in the port city of Rijeka? This identification offers insights into the challenges to practitioners, policy- and decision-makers, and other actors dealing with the adaptive reuse of cultural heritage. Therefore, this research raises awareness of the factors hampering the adaptive reuse of cultural heritage. Furthermore, solutions to overcome these barriers are also offered. Identifying these challenges is the first step to facilitating these reuse practices, which promote sustainable development and constitute the entry point for circular cities (Bullen & Love, 2011b; Fusco Girard, 2019).

## 4.2 Materials and methods

This study identified challenges to cultural heritage adaptive reuse and solutions to overcome these challenges at multiple scales in the case study of Rijeka. The factors hampering heritage reuse were derived by content analysis of the data collected through a stakeholder engagement workshop. Here, "stakeholder participation" refers to the process of involving a broad variety of actors of heritage reuse in producing the knowledge that informs the data collection. However, participation is mentioned in the results as the various processes of stakeholder collaboration (Gray, 1989; Christine Landorf, 2009) in the adaptive reuse of cultural heritage. This second meaning encompasses the varying degrees of democratic participation in decision-making (Arnstein, 1969; Council of Europe, 2005; Christine Landorf, 2009).

### 4.2.1 Participants

Thirty-five stakeholders (hereafter participants) participated in the study. They were selected by purposeful sampling (Sheila Conejos et al., 2016; Patton, 2015; Sarabi et al., 2020) to engage relevant stakeholders in identifying the challenges encountered in the adaptive reuse of cultural heritage and solutions. As the adaptive reuse of cultural heritage is a multi-disciplinary (Plevoets & Van Cleempoel, 2019) and multi-actor (Sheila

Conejos et al., 2016; Damla Misırlısoy & Günce, 2016; Wilkinson, 2014b) practice–interlinked with heritage, urbanism, and sustainable development—the participants were sampled among stakeholders from the public, private, knowledge, and NGO sector and experienced in adaptive reuse, heritage conservation and management, circular cities, and sustainable urban development fields within Rijeka or Europe. The participants were representatives of (i) the Municipality of Rijeka with expertise in energetic renovation and entrepreneurship development; (ii) the Port Authority of Rijeka managing the industrial heritage building of the docks; (iii) the Natural History Museum of Rijeka, which is hosted in a reused villa and castle; (iv) the Rijeka2020 Agency engaged in reusing several heritage sites on occasions of the year as the European Capital of Culture; (v) the tourist board; (vi) cultural associations and institutions, e.g., CTK Rijeka; (vii) an architecture firm; (viii) a consulting firm for urban regeneration; (ix) a waste management company; and (x) researchers, NGOs, and local/regional authorities involved in the CLIC project. Hence, this variety of participants allows the engagement of a broader range of actors in identifying these challenges. Considering these other views better reflects the spectrum of heritage reuse stakeholders and addresses their limited variety in previous identifications, as also highlighted by Conejos and co-workers (2016).

The Municipality of Rijeka—the local partner in organizing the workshop—invited the stakeholders. The stakeholders that accepted the invitation voluntarily took part in the workshop and received the informed consent form used by the CLIC project, the EU funded Horizon2020 project framing this study. Furthermore, the data collected were anonymous.

#### **4.2.2 Framework for the Identification of Challenges of Cultural Heritage Adaptive Reuse**

To identify the challenges, the participants were provided with a framework guiding them in scrutinizing the adaptive reuse of cultural heritage. In other words, participants used a framework to assess heritage reuse practices and identify their challenges, hereafter “identification” or “assessment framework”. This framework was based on the Historic Urban Landscape (HUL) approach and a multi-scale perspective.

#### 4.2.2.1 Historic Urban Landscape Approach

To identify challenges, the participants' assessment of the adaptive reuse of cultural heritage was framed by the six steps of the HUL approach, hereafter HUL steps (Table 4.2). The UNESCO Recommendation on the Historic Urban Landscape proposed a holistic and integrated approach to heritage conservation and management (Pereira Roders, 2019; UNESCO, 2011b). Thus, the HUL approach considers the wider urban context without being limited to the heritage site, it adopts an interdisciplinary perspective, and it recognizes the complexity and layering of the landscape (Ginzarly et al., 2019). This approach acknowledges the need to integrate conservation into the wider goal of sustainable urban development and vice versa and manages "thoughtful change" (Ginzarly et al., 2019, p. 3). At the local level, the HUL steps (Table 4.2) guided the establishment of several action plans for heritage conservation and management (Pereira Roders & Bandarin, 2019), e.g., a workshop in Zanzibar to identify actions to integrate conservation and planning (Van Oers, 2013). Hence, they can be adopted as a framework to analyse conservation processes. As adaptive reuse is a strategy to conserve cultural heritage, the HUL steps were selected to frame the assessment of this process to identify its challenges.

**Table 4.2.** Identification framework: The six Historic Urban Landscape (HUL) steps.

Short name	HUL step description <sup>1</sup>
Mapping	Mapping natural, cultural, and human resources
Consensus	Reaching a consensus on what values and related attributes to protect
Vulnerability	Assessing the vulnerability of the identified values and related attributes to change and development
Integrate	Integrating values, related attributes, and their vulnerability in urban development framework
Prioritize or prioritization	Prioritizing actions for conservation and development
Partnership	Establishing local partnerships and management frameworks for each of the actions

<sup>1</sup> Adapted from Gravagnuolo & Girard (2017), Veldpaus (2015), and WHITRAP & City of Ballarat (2016).

#### 4.2.2.2 Multi-Scale and Case Study

The identification of challenges to the adaptive reuse of cultural heritage considered multiple scales: site scale, the urban scale, and “elsewhere.” This multiscale perspective was adopted to include the impacts of measures and practices at various levels that influence adaptive reuse (Ikiz Kaya, Pintossi, et al., 2021; Wilkinson, 2018). The scale “elsewhere” signified scales wider than the urban level, e.g., national, or contexts for knowledge transfer. The participants were asked to further specify this scale (Pintossi et al., 2021c).

For the site scale, the RiHub building was selected for the case study. It is a multifunctional space that serves as the information centre for the Rijeka European Capital of Culture 2020, operational centre for the Rijeka 2020 Agency, and venue for the participatory programs (Grad Rijeka, n.d.; Rijeka 2020, n.d.-b, n.d.-a, n.d.-c). It also hosts a co-working space for professionals active in the cultural and creative sector, the first in the city (Pintossi & Ikiz Kaya, 2020; Rijeka 2020, n.d.-b). The historic building was designed by Luigi Luppis, a prominent architect in Rijeka, and it is an example of Art Nouveau architecture in the city (*Arhitektura Secesije u Rijeci*, n.d.; Rijeka Heritage, n.d.). It was built at the beginning of the 20th century as the first nursery of the city and for housing. After the nursery was closed, several commercial activities followed one another until, in 2018, RiHub was inaugurated (Grad Rijeka, n.d.; Rijeka 2020, n.d.-b; Rijeka Heritage, n.d.). The building is currently owned by the Municipality of Rijeka (Rijeka Heritage, n.d.). RiHub was selected as the site case because (i) of its historic and architectural values; (ii) part of the space will need a new function, once the program of Rijeka European Capital of Culture is concluded (Rameša, 2019); and (iii) it received the Croatian Architects’ Association “Bernardo Bernardi” award for the interior design (Grad Rijeka, 2019).

The urban level considered the city of Rijeka as a whole. This post-industrial port city, located in the Northeast Adriatic, is the third Croatian city and the principal port of the country. Its urban landscape includes a medieval core and the developments of the 19th and 20th centuries (Ažman Momirski, 2020; Lovra, 2016; Lozzi-Barkoviae, 2006). In the 19th and 20th centuries, the port and the industry activities drove the growth of the city until it was halted by the Croatian War of Independence and the consequential political and economic changes. Several industries were



closed, and the port activity was downsized, leaving the city of Rijeka to adapt to the mutated conditions (Ažman Momirski, 2020; Mrak, 2013). This city was chosen as a case study as it is an example of a European post-industrial city with a vast heritage, and an urban regeneration strategy focusing on heritage conservation as part of its plan to develop into a cultural city and urban tourist destination (Lozzi-Barkoviae, 2006; Marjanić, 2011; Mrak, 2013; Stipanović et al., 2019; Urošević, 2015).

#### **4.2.3 Data Collection: The Historic Urban Landscape (HUL) Workshop**

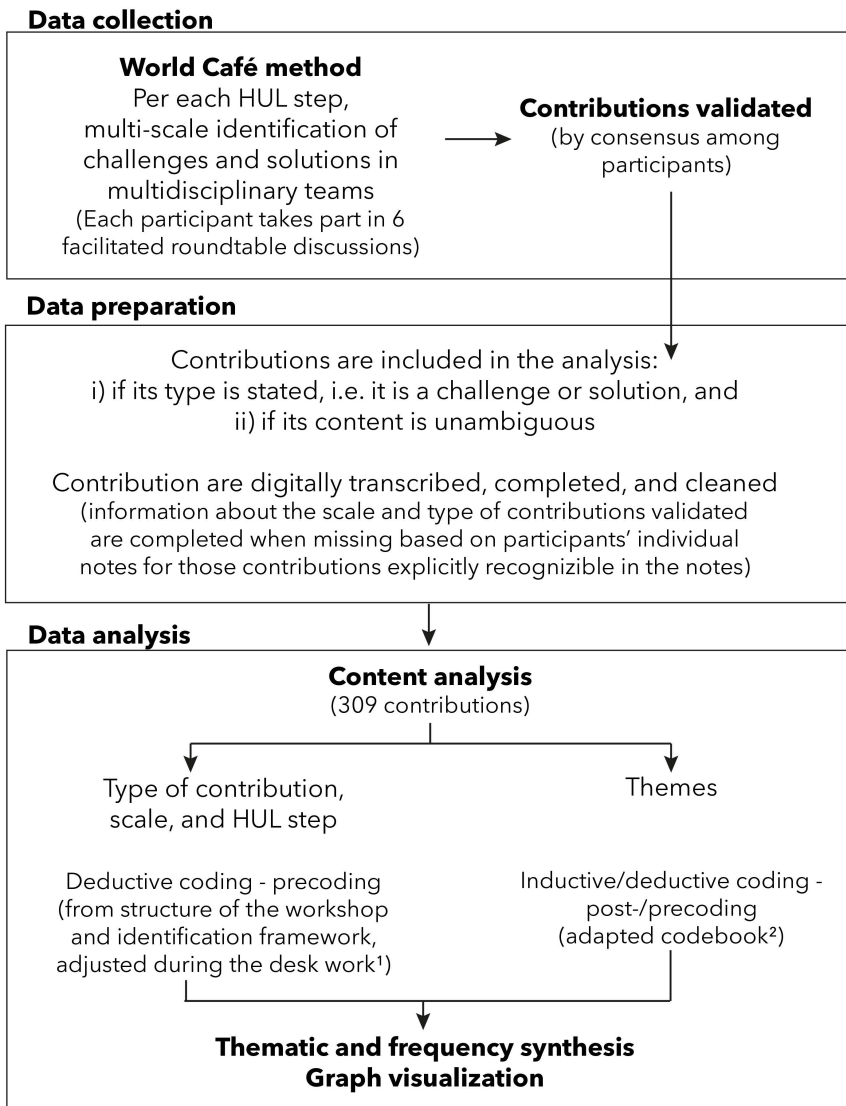
Focus groups were employed for the data collection that was performed during the HUL workshop, held in Rijeka in March 2019, within the CLIC project—Circular models leveraging investments in Cultural Heritage Adaptive Reuse. This method was chosen because it is a participatory method that “collects data through group interaction on a topic determined by the researcher” (Morgan, 1996, p. 130). Focus groups were selected as the data collection method because they allow the harvest of information based on group intelligence and entail mutual learning (Löhr et al., 2020). On the one hand, participants also benefit from joining the workshop. On the other hand, the research benefits from the data validation by consensus, and from the interaction among participants that stimulates their reflection (Acocella, 2012). Furthermore, as Landorf (2009) points out, “stakeholder participation offers a mechanism to gain a holistic understanding of a social problem” (p. 496). The workshop was structured as a series of six sessions of parallel focus groups.

In multidisciplinary teams, participants identified challenges and proposed solutions in six sessions of parallel focus groups. The workshop started with a plenary session introducing and explaining the research activity. In other words, participants were presented with the framework for the identification of challenges of cultural heritage adaptive reuse and the structure of the workshop. The aim was clarified, i.e., identifying challenges to the adaptive reuse of cultural heritage in Rijeka at multiple scales and proposing solutions to tackle these issues. In the room, there were six tables with six chairs each. Every table was dedicated to a specific HUL step and had an assigned facilitator. At the start of each session, participants joined one of the tables. As they were asked to try to avoid sitting with representatives of the same organization or project, this ensured multi-disciplinary and multi-stakeholder discussions. Once a table

was joined, participants identified challenges to cultural heritage adaptive reuse, focusing on the multiple scales considered and the HUL step addressed at that table. Each focus group session was structured in three phases and lasted 20 minutes. First, the facilitator re-introduced the HUL step framing the identification. Second, the participants had a few minutes to individually identify the challenges and gather their own thoughts. Finally, the facilitated roundtable discussion took place and the group collectively identified the challenges and proposed solutions. The facilitators took notes reporting the contributions made by the participants. Afterwards, participants joined another table. The contributions were agreed upon and validated by consensus among the participants, and they constitute the data analysed in this study.

#### **4.2.4 Data Analysis**

To analyse the data set, content analysis techniques were employed (Krippendorff, 1980). Prior to the analysis, the corpus was prepared (Wickham, 2014) by translation and transcription of the contributions, removal of abbreviations, and exclusion of ambiguous wording. The contributions that could be identified neither as challenges nor as solutions ( $n = 2$ ) by the authors were also removed from the sample. A manifest analysis (Bengtsson, 2016) was conducted on the prepared corpus, including both inductive and deductive coding, resulting in a frequency and thematic synthesis (Figure 4.1) (Bengtsson, 2016; Krippendorff, 1980; Thomas & Harden, 2008). This coding was validated by peer debriefing (Janesick, 2015).

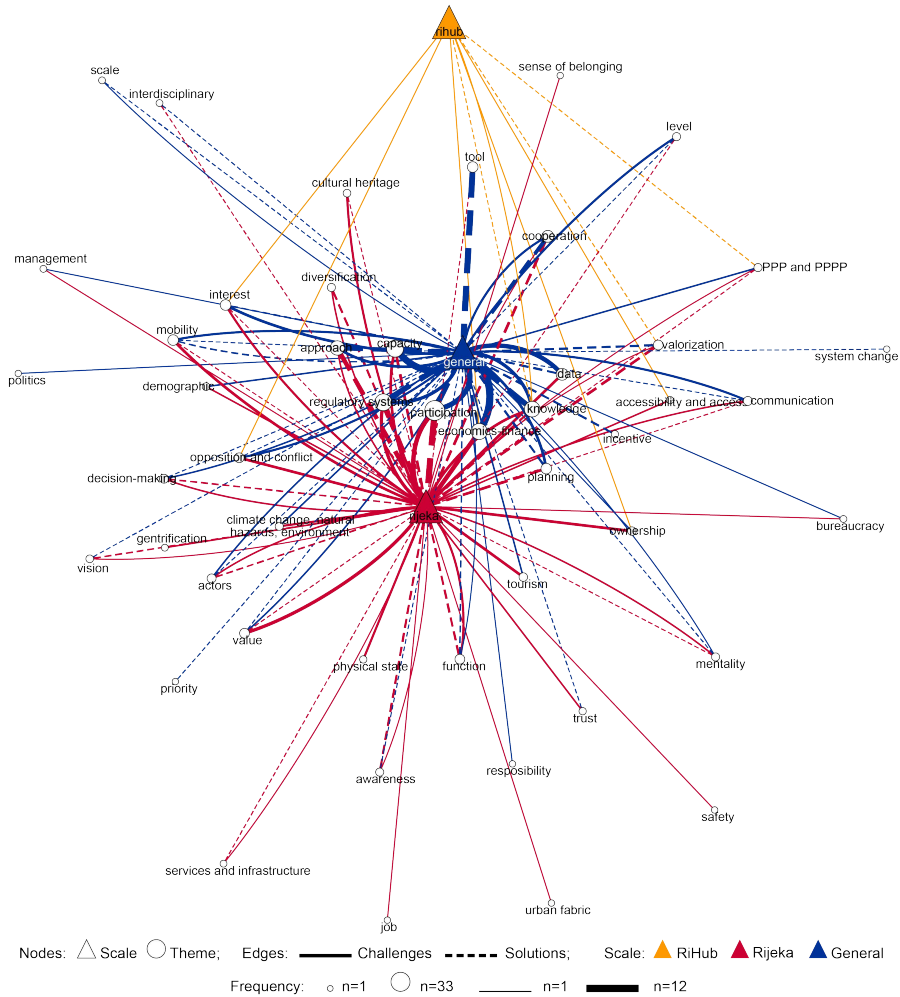


<sup>1</sup> During the analysis of the data collected the contributions associated with the scale code "elsewhere" were recoded as "general", to better reflect the use participants did of the code: providing contributions as general without specifying the referred context or scale. Furthermore, contributions for which the scale was not specified were assimilated to "general".

<sup>2</sup> (Pintossi et al., 2021b, 2021c)

Figure 4.1. Overview of data collection and analysis processes.

### 4.3 Results



Themes are mapped using a two-mode, nonsimple, and multiedge graph with loops represented using a Prefuse Force-Directed layout with the number of contributions for each theme as the directing force. Graph created using Cytoscape 3.8.0 (Shannon et al., 2003).

**Figure 4.2.** Overview of the challenges and solutions themes identified by content analysis.

A comprehensive identification of challenges is key to facilitating the adaptive reuse of cultural heritage. This study identified such challenges based on primary data reflecting the participants' experiences and opinions. The challenges participants involved in the workshop also proposed solutions to tackle these challenges at multiple levels. The first part of this section presents an overview of the themes revealed by the content analysis. Afterwards, the five most mentioned themes, i.e. those with higher frequencies, are discussed in further detail describing the challenges they refer to. These themes are participation, capacity, regulatory systems, economics-finance, and knowledge. Altogether, they represent a subset of 40% of the contributions analysed.

The content analysis was performed on 309 contributions. Thematic synthesis of the coding resulted in the identification of 48 themes. These themes encompassed both the challenges identified and the solutions proposed (Figure 4.2). Besides offering an overview of the themes revealed by the analysis, the graph in Figure 4.2 illustrates their distribution by scale and contribution type. The themes associated with the most frequent codes concern participation and participatory practices ( $n = 33$ ). This graph highlights that challenges referring to the same domain are encountered at different scales.

### 4.3.1 Participation-Related Challenges

In this research, participation challenges refer to the stakeholder engagement in the adaptive reuse of cultural heritage both at the urban level and as general issue. These challenges encompass the absence or limitation of participatory initiatives and difficulties in implementing participation processes (Table 4.3). Some of the challenges were identified both at the urban level and in general.

In some cases, the challenge causes were also identified. For example, the low or complete lack of participation in Rijeka is due to the absence of a "culture of participation", the excessive bureaucracy, and trust issues toward institutions. Furthermore, engaging stakeholders is a challenge that derives from the stakeholders' perceived lack of qualification to take part in such processes, as well as from the low willingness to participate.

Based on these results, it is noticed that challenges presented certain interdependencies. For example, the absence of participatory decision-making is due to the limited capacity available for bottom-up decision-

making in Rijeka. Similarly, the lack of the willingness to participate also influences the lack of representation of certain groups while reinforcing the challenge of engaging stakeholders.

**Table 4.3.** Participation-related challenges.

Overarching Challenge	Challenges	Site Scale	Urban Scale	General
Absent or limited participatory processes	Lack of participatory decision-making		▪	
	Lack of spontaneous participatory initiatives, they are limited to the ones organized by institutions			▪
Implementation of participatory practices	Lack of or limited participation, low willingness to participate		▪	▪
	Lack of or limited representation of certain groups, e.g., community, citizens		▪	▪
	Stakeholders' perceived lack of qualification to participate		▪	▪
	Timing of participation		▪	▪

### 4.3.2 Capacity-Related Challenges

Challenges referring to capacity encompass the lack of capacity and limitations in the available capacity in terms of expertise, skills, and human resources for the adaptive reuse of cultural heritage both at the urban scale and in general (Table 4.4). In other words, a need for capacity building and limitations in available human resources and time available were identified. In addition, the absence of financial resources prevents the attraction of the needed expertise and tradesmen from other areas. This suggests that some financial- and capacity-related challenges are interdependent.

**Table 4.4.** Capacity-related challenges.

Overarching Challenge	Challenges	Site Scale	Urban Scale	General
Lack of capacity	Absence of guidance for adaptive reuse of cultural heritage		▪	▪
	Lack of local expertise and skilled tradesmen		▪	▪
	Loss of traditional skills and provision of youth with skills			▪
Limitation available capacity	Limited time available from available human resources		▪	▪
	Limited competence/specialization in the public sector			▪
	Limited human resources			▪

### Regulatory-Related Challenges

The adaptive reuse of cultural heritage also faces challenges that are linked to existing regulatory systems, encompassing regulations and policy documents (Table 4.5). In the city of Rijeka, some challenges specifically refer to the port area where several industrial heritage buildings and infrastructures, awaiting adaptive reuse, are located. Participants mentioned the difficulty of complying with the local regulations. For example, the use of the “same materials and craft skills” (contribution 107) is required in the adaptive reuse of the vessel *Galeb*—the formerly floating residence of the Yugoslav statesman Josip Broz Tito to be reused as a museum (Rijeka 2020, n.d.-d). The results (Table 4.5) suggest the existence of a relation between the bylaw governing the procedure to apply for funding and some financial issues affecting the adaptive reuse of cultural heritage (§4.3.4).

**Table 4.5.** Regulatory-related challenges.

Overarching Challenge	Challenges	Site Scale	Urban Scale	General
Variety of strategy documents	Broad variety of strategy documents, need for integration		▪	▪
Compliance with regulations	Land management plan for the port area		▪	
	Requirements of local regulation for adaptive reuse		▪	
	Limitations/restrictions posed by the planning regulation			▪
Procedures	Authorization of permits		▪	▪
	Strict regulation for concessions for the port area		▪	
	Regulation to access funding			▪

### 4.3.3 Economics-Finance-Related Challenges

The economics-finance-related challenges encountered in the adaptive reuse of cultural heritage included the lack of funding to implement these interventions, as well as their financial sustainability over time, the perceived mismatch between the expenses and the results of some projects, and financial losses (Table 4.6). These issues are identified for all levels. At the site scale, the reliance of RiHub on the European Capital of Culture funding challenges its long-term viability after its termination. Similarly, concerns about financial sustainability derive from the predominant reliance on European funding for other adaptive reuse projects and regeneration programs in Rijeka. The lack of financial resources is also a challenge for some heritage sites whose management was delegated by the national government to the local government without providing funding to support such a task. In addition, financial resources are also lacking to avert the decay of heritage that causes a financial loss because of its worsening increases the costs of future interventions of restoration and repair. The lack of funding directly and indirectly hampers adaptive reuse. It indirectly affects processes, such as building capacity, creating additional challenges for heritage reuse (§4.3.2). Besides showing the existence of influences among challenges,



these results reveal the dynamic interlinkage among them. An example of this interlinkage is found among the lack of funding, the aggravation of the heritage decay, and the increase in intervention costs.

**Table 4.6.** Economics-finance-related challenges.

Overarching Challenge	Challenges	Site Scale	Urban Scale	General
Financial loss	Financial loss due to worsening of the decay of heritage		▪	▪ <sup>1</sup>
Financial sustainability	Reliance on EU funding	▪	▪	
	Lack of long-term revenue stream	▪		
Lack of or limited financial resources	Lack of financial resources for coordination among local authorities and among departments		▪	▪
	Lack of financial resources for maintenance and repair works, to implement adaptive reuse		▪	▪ <sup>1</sup>
	Lack of financial resources for specific activities (e.g., mapping, keeping information updated)			▪
	Lack of financial resources for the adaptive reuse of rural heritage			▪
	Lack of financial resources to build capacity among youth, to import experts, to attract professionals			▪
Mismatch investments-results	Perceived high costs and expenses compared with the results obtained		▪	

<sup>1</sup> This challenge refers to the national scale, i.e., the Republic of Croatia.

#### 4.3.4 Knowledge-Related Challenges

The knowledge-related challenges refer to issues concerning what is known in relation to heritage and its adaptive reuse. These challenges, identified at the site and urban levels and as general ones, span from the lack of knowledge to its acquisition and loss (Table 4.7).

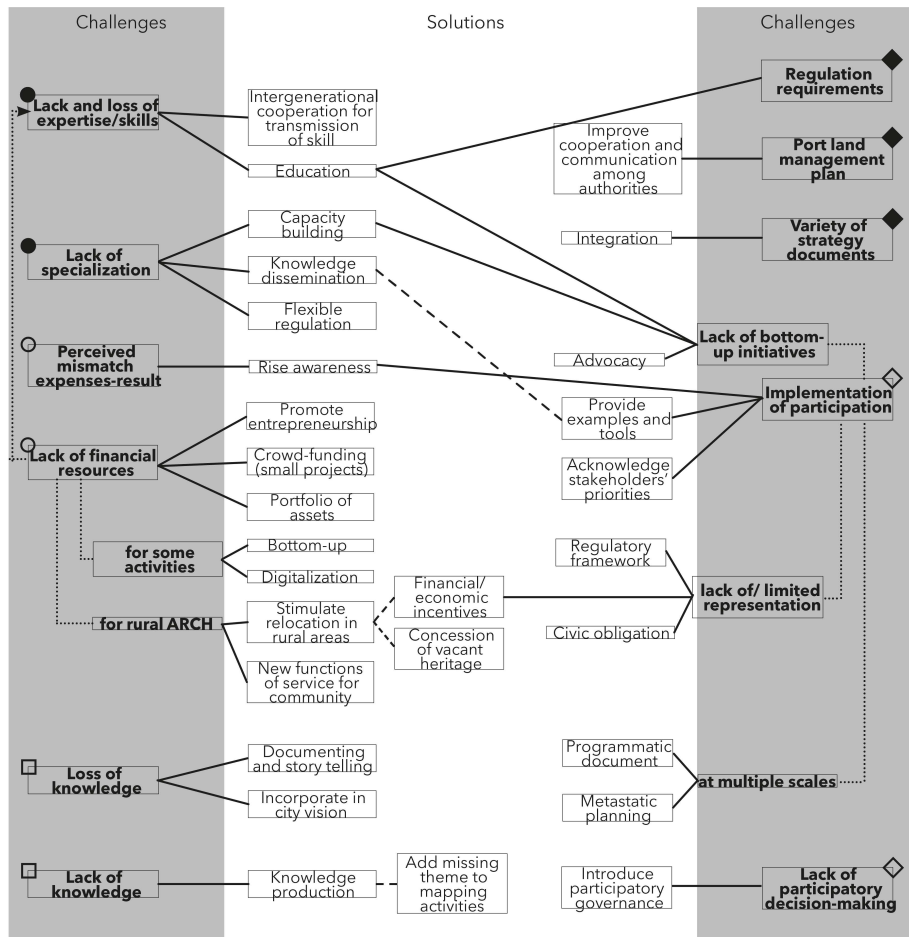
**Table 4.7.** Knowledge-related challenges.

Overarching Challenge	Challenges	Site Scale	Urban Scale	General
Loss of knowledge and threat to transmitting knowledge to succeeding generations	Loss of memory, stories, history, traditions, and meaning of heritage	▪	▪	▪
	Threat to historic relation of the city with the sea		▪	
Lack of knowledge	Lack of knowledge about the status of the heritage resources			▪
	Lack of knowledge (without specification)			▪
Lack of integration	The knowledge acquired by mapping lacks integration within urban planning			▪

#### 4.4 Discussion

Given the role of the adaptive reuse of cultural heritage as the entry point for circular cities (Fusco Girard, 2019) and its contribution to cultural heritage conservation and sustainable urban development (CHCfE Consortium, 2015b; *Davos Declaration 2018*, 2018; Guzmán et al., 2017; UNESCO, 2013; United Nations (Habitat III), 2017), the current study aimed to identify the challenges to the adaptive reuse of cultural heritage at multiple scales engaging a broad variety of stakeholders in a European case study, i.e., the port city of Rijeka. This challenge assessment can be regarded as a first step to facilitating the adaptive reuse of cultural heritage and thus harvests its potential for circular cities and sustainable development. The challenges were pinpointed by content analysis and frequency and the thematic synthesis of the data collected during a stakeholder engagement workshop. This workshop adopted the HUL approach and a multi-scale perspective. Participants in the study also suggested ways to overcome these hampering factors. In this section, these solutions are presented as recommendations (Figure 4.3). The analysis identified 48 themes (Figure 4.2) of challenges and solutions.

Particularly, the five themes more frequently mentioned by participants were: participation, capacity, regulatory systems, economics-finance, and knowledge.



Legend:  
 Relationship: — Challenge-Solution ..... Challenge-Challenge - - - - - Solution-Solution → "...affects..."  
 Theme: ● Capacity ○ Economic-finance □ Knowledge ◆ Regulatory ◇ Participation

Figure 4.3. Concept map illustrating solutions to the five most mentioned challenges.

Notably, the novel challenges identified expand the range of factors hampering the adaptive reuse of cultural heritage beyond design concerns and compliance with codes and legal requirements. These novel challenges are:

- The absence or limitation of participatory processes,
- The implementation of participatory processes,
- The lack of guidance for the adaptive reuse of cultural heritage,
- The limitation of available capacity,
- The variety of strategy documents,
- The long-term economic sustainability (operational phase),
- The lack of financial resources for cooperation and capacity building,
- The loss of knowledge and traditional skills and the threat to transmitting them to succeeding generations,
- The lack of integration among sources of information, and
- The depopulation.

The literature mentions local communities in relation to challenges concerning conflicts about the new uses of the heritage, as well as ensuring the “continuity of local community life” (Yung & Chan, 2012, p. 358). Yung and co-workers reported that community participation is absent in the decision-making without identifying it as a hindrance to reuse per se. Conversely, this study identified the absence or limitation of participatory processes as a challenge. In addition, the present findings indicate that challenges related to the implementation of participation (Table 4.3), such as the low willingness to participate and the limited representation of certain groups, are encountered beyond communities only. Yung et al. found that experts deemed the community participation problematic if its members lacked “an understanding of conservation, urban planning and cost analysis.” (Yung & Chan, 2012, p. 359). However, the present research suggests that a challenge to implementing participation also lays in the doubt of stakeholders about their own qualification in taking part in the adaptive reuse of cultural heritage processes. Concerning capacity-related challenges (Table 4.4), such as the lack of guidance for the adaptive reuse of cultural heritage, they add to the barrier posed by the availability of skilled tradesmen (Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016). This availability issue was also identified by this study. In the literature, the economic viability as

a challenge entails the conversion costs, the return on investment, and lifecycle costs such as maintenance and running costs (Shiple et al., 2006; Tan et al., 2018; Yung & Chan, 2012), whereas less emphasis is placed on the long-term economic sustainability of the adaptive reuse of cultural heritage projects, such as the reliance on certain sources of funding or ensuring a long-term revenue stream (Table 4.6). Previous research highlighted that heritage reuse is hampered by the availability of reliable information (Sheila Conejos et al., 2016). The present findings also suggest that the lack of integration among sources of information challenges the adaptive reuse of cultural heritage processes (Table 4.5). Furthermore, this study pinpointed that heritage reuse is challenged by the loss of knowledge and traditional skills, as well as the threat to their bestowal to future generations (Table 4.7). These issues relate to minimizing the change and preventing the loss of values that are barriers already identified in the literature (Mehr et al., 2017; Shiple et al., 2006; Yung & Chan, 2012).

These findings support the hypothesis that engaging a broad variety of stakeholders of the adaptive reuse of cultural heritage is beneficial. A more extensive overview of the range of challenges encountered in these practices was gathered but only reported in detail for the five most mentioned ones. In addition, the numerous challenges identified at the urban scale provide evidence that the adaptive reuse of cultural heritage is hampered not only by site-specific challenges.

In addition, this study also identified challenges that had already been reported in the literature (Table 4.1). This suggests the transferability of the results presented in literature considering case studies in East Asia, Oceania, and North America (e.g., (Bullen & Love, 2011d; Sheila Conejos et al., 2016; Elrod & Fortenberry, 2017a; Yung & Chan, 2012)) to the port city of Rijeka. It is confirmed that design-oriented challenges, e.g., compliance with regulations and codes, also apply to this case study. Yet, the challenges identified by the participants subsume characteristics that are context-specific (Eisenack et al., 2014). For example, in Rijeka, the challenges are associated with compliance with the land management plan for the port area instead of the zoning in general (Sheila Conejos et al., 2016).

Among the challenges that had already been identified in the literature, it is worth mentioning the one posed by the stigma associated with the site also reported by Wilkinson (Wilkinson, 2014a). This challenge refers to the intangible dimension of the heritage to reuse. Particularly, in Rijeka, some stakeholders contest the adaptive reuse of Galeb—the former floating residence of the Yugoslav statesman Josip Broz Tito. The reason for the contestation is that the “difficult history is still alive.” On the one hand, this challenge exemplifies that cultural heritage is not devoid of conflicts, contestation, and contradiction (Pereira Roders, 2019; Smith, 2012). On the other hand, it suggests the importance of the intangible dimension of heritage in its adaptive reuse.

Notably, this research also presents evidence of the interdependence, as well as the dynamic mutual interaction existing among some challenges, such as the lack of the willingness to participate influencing the lack of representation of certain groups. In some cases, participants also identified the causes of some challenges, e.g., lacking participation was due to trust issues. Based on these results, it is also suggested that for the adaptive reuse of cultural heritage, the understanding of challenges needs to be performed with a systemic approach instead of in isolation. This is in accordance with the recommendation of prior studies on barriers to climate change adaptation (Eisenack et al., 2014), implementation of nature-based solutions (Sarabi et al., 2020), and heritage climate change adaptation (Fatorić & Seekamp, 2017). To the best of our knowledge, this is one of the first studies reporting evidence on causes and interdependences among challenges to the adaptive reuse of cultural heritage. This study, based on manifest content analysis, limited the identification of interdependences to those explicitly presented in the data. Nevertheless, the literature on barriers in other domains suggests the existence of a broader network of interdependences. For example, it is found that funding barriers drive institutional barriers in heritage climate change adaptation (Fatorić & Seekamp, 2017). Likely, it can be inferred that the limited availability of human resources for the adaptive reuse of cultural heritage identified in this study is due to a lack of financial resources. Therefore, the findings on the relationships among challenges are preliminary insights that raise questions about what other relationships exist and which ones prevail.

Based on the above findings, a reference framework to address the challenges identified is outlined in the form of a concept map (Figure 4.3). The solutions reported in this map are derived from participants. First, some solutions are common to more challenges. For example, on the one hand, activities raising awareness of the benefits of heritage reuse can help overcome the perceived mismatch between the expenses incurred for it and the results obtained. On the other hand, raising awareness of the benefits of participation in heritage reuse can facilitate its implementation. Second, a solution while directly tackling a specific challenge could also indirectly address challenges that are interlinked to the one directly tackled. Namely, resolving the lack of financial resources could also favour addressing the loss of expertise and skills. This suggests that synergies could be exploited in overcoming challenges. Hence, both challenges and solutions could benefit from a systemic approach combining actions and strategies, instead of addressing the challenges one by one.

This research illustrates the variety of challenges faced by the adaptive reuse of cultural heritage, identifying novel challenges and proposing solutions to overcome them. This overview informs policy-makers, decision-makers, and stakeholders engaged in the adaptive reuse of cultural heritage processes. Raising awareness of the current challenges and their scale of application can help address them, thus facilitating the implementation of the adaptive reuse of cultural heritage. Outlining some of the interdependences existing among challenges offers insights into their co-occurrence. This suggests the need to address these issues in a systemic way, also considering the nonmutual exclusivity of some challenges. The insights into challenges coupled with the reference framework provide knowledge to develop actions, strategies, and policies to facilitate the adaptive reuse of cultural heritage practices. Besides informing these practices, the overview can also be of relevance to practitioners in the fields of heritage management and conservation, as well as urban planning and development.

Furthermore, the results presented can contribute to the expanding literature on the sustainable development and regeneration of port cities and areas (De Medici et al., 2018; Gravagnuolo et al., 2019; Kermani et al., 2020) by presenting the adaptive reuse of cultural heritage within the port city of Rijeka. In fact, port areas are recognized as having a potential role in sustainable development starting with their heritage (Fernandes et al.,

2020; Fusco Girard, 2013; Hettema & Egberts, 2020). Yet, limitations are present to the applicability of these results as they are based on a case study.

Although this study offers an overview of the challenges to the adaptive reuse of cultural heritage in the port city of Rijeka, providing insights into the future adaptive reuse of cultural heritage practices and policy-making to facilitate them, it also presents some limitations. First, the transferability of the findings to other contexts was not tested. Second, the exploratory characteristics of this study rely on the participants' experiences. Particularly, as the findings are based on participants' consensus, contradictions among different actors might not be captured. In other words, a category of actors might consider a factor as a barrier, whereas another determines it as an opportunity (Bullen & Love, 2011b; Eisenack et al., 2014). Finally, only a few contributions considered the site scale, whereas the majority focused on the urban scale or general factors. On the one hand, this might introduce a scale bias; hence, results were not discussed from this perspective. On the other hand, the extent of the generalizability of the general factors is to be further validated.

## 4.5 Conclusions

As a strategy for heritage conservation, sustainable development, and the entry point for circular cities, the adaptive reuse of cultural heritage is receiving increasing attention. However, the implementation of these heritage reuse processes is hampered by several challenges. This chapter aimed to identify the challenges to the adaptive reuse of cultural heritage by engaging a broad range of stakeholders, as well as considering a multi-scale perspective.

Based on our research, stakeholders identified a variety of novel challenges for the adaptive reuse of cultural heritage both at the urban and site level, such as the implementation of participatory practices, the absence of guidance for the adaptive reuse of cultural heritage, and the economic-financial sustainability in the operational phase of reused heritage. This research not only introduces novel challenges to the adaptive reuse of cultural heritage, but it also proves the transferability of some of the issues reported in the literature to the city of Rijeka. In addition, these findings highlight that the use of a multiscale perspective



and of a landscape-based approach provides more insights into the variety of challenges hindering heritage reuse practices. Solutions were also proposed based on the stakeholders' suggestions, and interdependences among challenges were revealed.

The results of this research suggest the need for a systemic approach coupled with a multi-scale perspective in addressing the challenges to the adaptive reuse of cultural heritage. The overview of these challenges and the proposed solutions raise awareness among the stakeholders involved in implementing heritage reuse, as well as provide evidence to policy-makers and decision-makers. This is the first step to finding synergic strategies to address the challenges to the adaptive reuse of cultural heritage. Addressing these issues can facilitate these conservation practices that are key to circular cities and play a role in sustainable urban development.

Future research is needed to identify the relationship existing among challenges in order to identify those that are preconditions to tackle other challenges. Similarly, additional research is required concerning the solutions and their implementation to address the system of challenges outlined in the present study. Furthermore, as the challenges are context, time, and actor-specific, and as this study is based on a case study, future research can investigate the application of the present findings in other contexts.

4

This chapter has identified the challenges encountered in the adaptive reuse of cultural heritage in the city of Rijeka expanding the range of issues already presented in the literature. An example of these issues is the economic-financial sustainability in the operational phase of reused heritage. The five themes of challenges and solutions that are mostly mentioned refer to participation, capacity, regulatory systems, economics-finance, and knowledge. This chapter also confirms the applicability to the city of Rijeka of challenges found in literature such as the availability of skilled craftsmen and the stigma associated with the heritage to be reused. The findings demonstrate that adaptive reuse of cultural heritage is hampered not only by site-specific challenges, but also by challenges interesting the urban level. Furthermore, the chapter also provides evidence of the interdependence and the dynamic mutual interaction existing both among some challenges and solutions, raising questions about what relationships exist and which ones prevail. For example, a challenge such as the lack of financial resources for heritage reuse impacts the lack and loss of expertise and skills, another challenge identified. Although challenges are context-specific and change over time, further studies are needed to compare case studies. This comparison can enable the generalization of findings to abstract them through a higher-level synthesis (Eisenack et al., 2014). In the following chapter, therefore, a comparison of challenges is performed to identify the challenges common to the three European case studies investigated.

## Chapter 5

# Challenges of cultural heritage adaptive reuse: a comparative European stakeholders-based study

This chapter is adapted from:

Pintossi, N., Ikiz Kaya, D., Pereira Roders, A. (Forthcoming). Challenges of cultural heritage adaptive reuse: a comparative European stakeholders-based study.

The dataset analysed in this chapter is deposited at <https://10.5281/zenodo.5584417>.

This chapter presents the comparative study of challenges to the cultural heritage adaptive reuse identified in the European cities of Amsterdam in The Netherlands; Rijeka in Croatia; and Salerno in Italy. Challenges common to the three cities are identified deriving a general insight from the case studies presented in the previous chapters. These common challenges are also related to the Sustainable Development Goals to identify which challenges could benefit the SDGs by being addressed.

**Abstract:** The adaptive reuse of cultural heritage can contribute to sustainable development and circular economy, preventing waste production and resource depletion by extending the heritage lifespan. Reuse is limited by various challenges that are identified at the case study level. However, these challenges need to be further theorised to enrich the related body of knowledge and contribute to their mitigation. By defining a theoretical framework, this research builds on the cross-sectional analysis of adaptive reuse undertaken in three European cities: Amsterdam, Rijeka, and Salerno. The challenges were identified by representatives of the public, private, knowledge, and non-profit sectors through stakeholder engagement workshops. Examples of challenges common to the three cities are shortcomings in existing approaches; lack of awareness and capacity; cultural heritage interpretation and management; data management; costs; conflicting interests; lack of knowledge; lack of participatory processes; and compliance with regulatory, policy, and legislative documents. Being identified in diverse European cities, these challenges can be representative within the European region. Arguably, some of these challenges also apply to other regions since they were reported in case studies from Asia, North America, and Oceania. Addressing these challenges could contribute to sustainable development, as they align with ten Sustainable Development Goals.

## 5.1 Introduction

Cultural heritage can play a role in sustainable development. It is increasingly recognized as a contributor to urban identity and liveability (CHCfE Consortium, 2015b; *Davos Declaration 2018*, 2018; Guzmán et al., 2017; Chris Landorf, 2009; UNESCO, 2013; United Nations General Assembly, 2015). Heritage contribution to sustainable development is acknowledged by including its conservation as a target to “make cities and human settlements safe, resilient and sustainable”, i.e. Goal 11 of the 2030 agenda for sustainable development of the UN (United Nations General Assembly, 2015). For example, cultural heritage enables social cohesion by “offer[ing] platforms for shared identities, experiences, and exchange” if inclusive heritage practices are applied (Labadi et al., 2021, p. 71). Heritage can contribute to sustainable development also by “enhance[ing] long term tourism benefits” (ICOMOS General Assembly, 2011; Labadi et al., 2021, p. 12). Likewise, the role of heritage within circular economy and circular cities is receiving attention (Foster, 2020; Fusco Girard, 2019; Ikiz Kaya, Dane, et al., 2021). Prolonging the life cycle of cultural heritage through conservation, e.g. by reuse, aligns with the circular economy purposes of closing or slowing resource loops, reducing the consumption of resources, and preventing waste production (Foster, 2020; Fusco Girard, 2019). Yet, non-renewable heritage resources need to be conserved (Labadi et al., 2021) to contribute to sustainable development and circular economy (CHCfE Consortium, 2015b; Council of Europe, 2014).

To conserve cultural heritage, adaptive reuse is an acknowledged strategy. “Adaptive reuse” here refers to the process that extends the heritage useful life by providing it with a (new) use, hence conserving it (Sheila Conejos et al., 2016; Douglas, 2006). The Adaptive Reuse of Cultural Heritage (ARCH) can contribute to sustainable development and circular cities (Bullen & Love, 2011b; Sheila Conejos et al., 2016; Department of Environment and Heritage, 2004; Fusco Girard, 2019; Mohamed et al., 2017; Vardopoulos, 2019; Yung & Chan, 2012). The first contribution to sustainable development is deciding to implement adaptive reuse (Bullen & Love, 2011b; Glumac & Islam, 2020). Not only this decision prevents/reduces the production of demolition waste (Yung & Chan, 2012), but also can conserve the embodied energy (Sheila Conejos et al., 2016), retain the heritage attributes and values (Bullen & Love,

2011b; Remøy, 2014), reduce costs at times (Alba-Rodríguez et al., 2021; Bullen & Love, 2011b; Shipley et al., 2006; Yung & Chan, 2012), generate employment (Dyson et al., 2016), prompt transit-oriented growth (Riggs & Chamberlain, 2018) and contribute to placemaking (Architects' Council of Europe, 2018; Hill, 2016; Zang et al., 2020). These are additional examples of how ARCH benefits the environmental, social, cultural, and economic dimensions of sustainable development (Vardopoulos, 2019). Furthermore, some of the environmental benefits of adaptive reuse can contribute to fighting climate change by mitigating its impact while possibly integrating climate adaptation strategies within the built environment (Architects' Council of Europe, 2018; Sheila Conejos et al., 2016; Fatorić & Egberts, 2020; Yung & Chan, 2012). Therefore, conserving cultural heritage by adaptive reuse can contribute to sustainable development (CHCfE Consortium, 2015b; Guzmán et al., 2017).

Striving for sustainability and overcoming the threats posed by climate change, the European Union (EU) aims at being climate neutral by 2050. The EU set this aim forward with the policy initiative known as European Green Deal (EGD) (European Commission, 2019). The EGD pays also attention to the building stock which accounts for about 40% of the EU energy consumption and more than 35% of greenhouse gas emissions from energy (Ellen MacArthur Foundation, 2019; European Commission, 2019; UN Environment and International Energy Agency, 2017). To fulfil the aim of the EGD, the Renovation Wave Strategy (European Commission, 2020) was launched. This strategy pursues higher resource and energy efficiency by renovating the existing buildings. Within this strategy, the New European Bauhaus poses culture and the built environment at its core. This initiative is set to promote co-creation and "design future ways of living, situated at the crossroads between art, culture, social inclusion, science and technology" (European Commission, n.d.). Within this effort to improve the sustainability of the built environment, as Glumac and Islam (2020, p. 1) pointed out, "adapting instead of demolishing when possible (Bullen & Love, 2010), is an essential ingredient to change the building industry towards more sustainable future and conserve valuable resources for the time ahead". Therefore, to achieve the aim set by the EGD and the aspiration of the New European Bauhaus, the conservation of cultural heritage plays a key role as it does its adaptive reuse.

Adaptive reuse entails a complex decision-making process (Aigwi et al., 2019; Giuliani et al., 2018; Glumac & Islam, 2020). To facilitate these processes, several decision-support tools have been developed over time, considering both the expert (Aigwi et al., 2020; Sheila Conejos et al., 2017; Langston & Shen, 2007; Damla Mısırlısoy & Günce, 2016; Tan et al., 2014) and the user perspectives (Glumac & Islam, 2020; Oppio et al., 2017). In addition to decision support tools, the ARCH could also be enabled by identifying, understanding, and possibly addressing its challenges. In other words, since challenges hinder the ARCH, identifying them can contribute to determining solutions to address them and potential levers to enable the ARCH. Enabling the ARCH can likely contribute to sustainable development, in general, and implementing the vision set forward by the EGD, within the EU. Yet, the challenges that hamper the adoption and implementation of adaptive reuse are limitedly theorized.

The literature identifying challenges to the ARCH is mostly based on case studies (e.g. Bullen & Love, 2011b; Sheila Conejos et al., 2016; Yung & Chan, 2012). Even when comparing examples of adaptive reuse, the examples are mostly within a city or a broader territory (e.g. Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016) or within one country (e.g. Australia in Clark, 2013). Cross-territorial comparisons are limited, and often their main aim is not to identify challenges. For example, these comparisons identify design approaches (Hetteema & Egberts, 2020) or propose a model for adaptive reuse strategies (Damla Mısırlısoy & Günce, 2016). However, a comparison of challenges to the ARCH across nations contributes to identifying differences and similarities within these challenges, allowing challenges to be further theorised. The generalization enabled by a new cross-territorial overview can help define a theoretical framework for the challenges of the ARCH (Eisenack et al., 2014). It can also help determine the impact of contextual factors and ways to overcome such challenges, both beyond the scope of the present research (Eisenack et al., 2014; Esser & Vliegthart, 2017).

To contribute to theorising such challenges, this chapter presents a cross-sectional analysis within Europe, i.e. a cross-territorial comparative study (Esser & Vliegthart, 2017). By this comparative study, the chapter aims at determining the common challenges to the ARCH from the stakeholders' perspective. The challenges were identified by using stakeholder engagement workshops and considering a multi-scale perspective. Hence, the present research attempts to answer how

challenges to the ARCH compare in the cities of Amsterdam, Rijeka, and Salerno. Not only the general insight derived might likely be valid within the European region, but also within other world regions, where contexts similar to the case studies investigated are found.

This chapter is organized into five additional sections. Section 5.2 introduces the challenges for the ARCH reported in the literature. Section 5.3 describes the methodology. Section 5.4 reports the results of the cross-sectional comparative study, the overview of the SGDs relating to these challenges, and the geographical coverage of these challenges. Section 5.5 discusses the findings and draws the main conclusions.

## 5.2 Challenges to the adaptive reuse of cultural heritage

Although presenting benefits and entailing opportunities, the ARCH also encompasses many challenges. Challenges can broadly be defined as factors hampering the adoption and implementation of heritage reuse. Therefore, they entail barriers, hurdles, constraints, and obstacles. A list of the challenges to the ARCH, derived by literature review, is reported in Table 5.1. The literature identifying such challenges presents cases from the regions of Africa (Steinberg, 1996), Asia (Tan et al., 2018; Yung & Chan, 2012), Europe (Fernandes et al., 2020; Remøy & Van Der Voordt, 2014), North America (Bourne, 1996; Elrod & Fortenberry, 2017a; Shipley et al., 2006), and Oceania (Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016; Dyson et al., 2016; Mehr et al., 2017). Particularly, economic concerns and contamination issues are the challenges that are reported in cases spread among most regions, i.e. Asia, Europe, North America and Oceania. Overall, in the identification of challenges, these studies mainly engaged architects, developers, and project managers (Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016; Dyson et al., 2016; Shipley et al., 2006), although sometimes also representatives from the public sector and NGOs were interviewed (Yung & Chan, 2012).



**Table 5.1.** Challenges for the adaptive reuse of cultural heritage, their geographical distribution, and underpinning literature.

Challenge	Region <sup>1</sup>					References <sup>2</sup>
	Af	As	Eu	NA	Oc	
Availability of reliable information				▪	▪	(Bourne, 1996; Sheila Conejos et al., 2016)
Availability of skilled craftsmanship and materials compatible with the original ones				▪	▪	(Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016; Douglas, 2006; Shipley et al., 2006)
Compliance with safety requirements				▪	▪	(Aigwi et al., 2018; Bullen & Love, 2011b; Clark, 2013; Sheila Conejos et al., 2016; Douglas, 2006; Shipley et al., 2006)
Conflict with the local community about the new uses of the heritage				▪		(Elrod & Fortenberry, 2017a)
“Continuity of local community life”		▪				(Yung & Chan, 2012)
Economic viability and costs		▪	▪	▪	▪	(Sheila Conejos et al., 2016; Douglas, 2006; Elrod & Fortenberry, 2017a; Fernandes et al., 2020; Shipley et al., 2006; Tan et al., 2018; Yung & Chan, 2012)
Handling of contaminations and hazardous materials		▪	▪	▪	▪	(Clark, 2013; Douglas, 2006; Hetteema & Egberts, 2020; Remøy & Van Der Voordt, 2014; Shipley et al., 2006; Tan et al., 2018; Vrusho & Pashako, 2018)
Identification of the new function						(Damla Mısrılısoy & Günce, 2016; Plevoets & Van Cleempoel, 2019)
Minimization of change		▪		▪	▪	(Douglas, 2006; Mehr et al., 2017; Shipley et al., 2006; Yung & Chan, 2012)
Obtainment of the approval of the change of use		▪		▪	▪	(Sheila Conejos et al., 2016; Douglas, 2006; Elrod & Fortenberry, 2017a; Langston & Shen, 2007; Wilkinson et al., 2014)
“Physical restrictions” (e.g. the structural grid)					▪	(Sheila Conejos et al., 2016; Douglas, 2006; Mehr et al., 2017; Plevoets & Van Cleempoel, 2019)
Political circumstances	▪	▪		▪		(Bourne, 1996; Steinberg, 1996)
Prevention of values loss		▪		▪	▪	(Mehr et al., 2017; Shipley et al., 2006; Yung & Chan, 2012)
Public awareness					▪	(Bullen & Love, 2011b)
Status of physical decay			▪		▪	(Douglas, 2006; Dyson et al., 2016; Remøy & Van Der Voordt, 2014; Vrusho & Pashako, 2018)

<sup>1</sup> As=Asia, Af=Africa, Eu=Europe, NA= North America, Oc= Oceania, SA= South America.

<sup>2</sup> Some references identify challenges for adaptive reuse in general and not specifically for the reuse of heritage. Some references report challenges without referring to specific cases, e.g. Mısrılısoy & Günce (2016), and the handbooks by Douglas (2006), Plevoets & Van Cleempoel (2019), and Wilkinson et al. (2014).

## 5.3 Methods

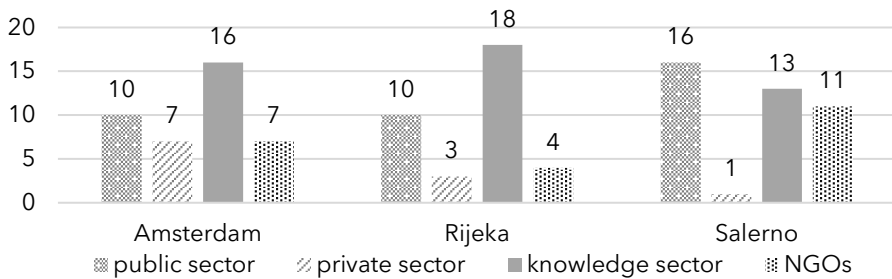
### 5.3.1 Multiple-case study

This research performed a multiple-case study (Eisenhardt & Graebner, 2007) comparing the cities of Amsterdam in The Netherlands, Rijeka in Croatia, and Salerno in Italy. These three cities were the pilot cases of the project framing the present research. The case studies were selected because of their geographical distribution and diversity in socio-economic-political contexts and scales. In each city, a similar data collection and analysis methodology were employed to enable data comparability. Particularly, the data collection adopted a multi-scale perspective to highlight the influence of scales on each other, considering how measures and processes at site and urban levels impact the adaptive reuse and vice versa (Galdini, 2019; Wilkinson, 2018). In other words, in each case, both site and urban scales were considered. Particularly, the examples of site scale were i) Pakhuis de Zwijger in Amsterdam, a warehouse reused as a cultural and communal hub (Pintossi et al., 2021b), ii) Rihub in Rijeka, a former nursery and store hosting a multi-functional space including a co-working (Pintossi et al., 2021a), and iii) Giardino della Minerva in Salerno, a 13th-century physic garden reused as a botanical garden with a herbal tearoom and a plant nursery (Pintossi et al., 2022). These sites were selected for representing good practices of the ARCH (Pintossi et al., 2021a, 2021b, 2022).

### 5.3.2 Data collection

To identify the challenges to the ARCH, a series of three stakeholder engagement workshops was organized, one in each city (Pintossi et al., 2021a, 2021b, 2022). Participants were divided into multi-disciplinary and multi-background teams. They participated in series of round table discussions to identify the challenges to the ARCH. To identify the challenges, the participants adopted a multi-scale perspective, respectively "site", "urban", and "elsewhere". This third scale was intended to offer the participants the possibility to refer to specific scales or other contexts deemed relevant for the discussion. Data was deduced from the participants' contributions to the discussions, validated by reaching consensus among these stakeholders.

The participants invited to attend these research activities represented a broad variety of stakeholders involved in the ARCH, reflecting the multi-disciplinary (Plevoets & Van Cleempoel, 2019) and multi-actor (Sheila Conejos et al., 2016; Damla Mısırlısoy & Günce, 2016) nature of reuse practices. The participants were experienced in adaptive reuse, heritage conservation and management, circular cities, and sustainable urban development fields within the three cities analysed and/or Europe (Pintossi et al., 2021a, 2021b, 2022). They were purposefully sampled among stakeholders from the public, private, knowledge, and non-for-profit-non-governmental sector (Aigwi et al., 2018). The profile of the workshop participants is provided in Figure 5.1. Respectively, 40 participants attended the workshop in Amsterdam, 35 in Rijeka, and 41 in Salerno.



**Figure 5.1.** Participants to the workshops per case study and per stakeholder group.

### 5.3.3 Data analysis

#### 5.3.3.1 Content analysis

The collected data was analysed by content analysis (Krippendorff, 1980). Prior to the analysis, the corpus of contributions reporting challenges was prepared and cleaned by digitally transcribing the contributions, excluding ambiguous wording, removing abbreviations, and translating to English some of them (Wickham, 2014). Afterwards, the corpus was inductively and deductively coded by manifest analysis and synthesised by frequency synthesis and thematic synthesis (Bengtsson, 2016; Thomas & Harden, 2008), validated by peer debriefing (Janesick, 2015). Regarding the multi-scale perspective, participants used the third scale to provide general contributions. Within each theme, contributions were categorized

into sub-challenges that were clustered into “challenges”: challenges further abstract a group of identified sub-challenges. In other words, challenges offer higher-level findings by synthesising the participants’ contributions into more general insights.

### 5.3.3.2 Comparative study

The comparative study of the three case studies contributes to advancing the understanding of challenges to the ARCH. A descriptive comparison of the cases is performed to identify the common challenges, i.e. those challenges that are reported in three different contexts, independently from their scale, enabling a first generalization. This comparative study is performed as a small-N, cross-sectional comparison, using as a unit of comparison the challenges and sub-challenges identified. These units are compared using the themes identified by the content analysis as comparison dimensions. Construct biases are voided by adopting a similar methodology for the data collection and involving participants representing similar stakeholder groups in each case. The chances of bias sampling are reduced by engaging similar participants. Finally, the measurement bias is avoided by having the same researcher perform the content analysis, validated by peer debrief (Janesick, 2015).

Since the purpose of this comparative study is to gather a general insight on challenges to the ARCH, themes were included in the comparison based on criteria set to select the prominent, common themes. In other words, the cross-sectional analysis considered themes reported in all three cases that also i) had at least five contributions and ii) were among the 10 most frequently mentioned within a case. These were the selection criteria adopted. Afterwards, challenges and sub-challenges were compared to identify the common ones.

Then, the common challenges were further analysed. Firstly, they were related to the 2015 UN Sustainable Development Goals (SDGs) (United Nations General Assembly, 2015) by deductive coding (Krippendorff, 1980), using the 17 SDGs as codes. Identifying the link between the common challenges and the SDGs allows highlighting which aspect of sustainability would benefit from addressing these challenges to the ARCH. Secondly, the common challenges were compared with the challenges identified by the literature review (Table 5.1) to determine whether they apply to other geographical regions besides Europe.

## 5.4 Results

### 5.4.1 Corpus and themes

Overall, the data collected during the three stakeholder engagement workshops includes 647 contributions reporting challenges to the ARCH. By thematic synthesis, 49 themes were identified, as illustrated in Figure 5.2. These themes can be organized into three groups based on the number of cases where they have been identified. The first group is constituted by the eight themes that concern only one case study. In this regard, Amsterdam counts the most themes referring to one case, i.e. four themes. The second group encompasses the themes shared between two cases. These themes are distributed as follow: nine are common to Rijeka and Salerno, four to Amsterdam and Salerno, and one to Amsterdam and Rijeka. In general, the 14 themes common to two cases encompass a modest number of contributions: 10 themes count less than 10 contributions each. In addition, the themes common to two cases are mainly characterized by a distribution of contributions skewed towards one case, since more than half of the contributions is identified in a case. This suggests that a theme was more mentioned in one case. This trend presents few exceptions, such as the themes referring to continuity and interdisciplinary. The third group gathers the themes that emerged from the analysis of all three case studies. Specifically, this group counts 27 themes. As it can be seen in Figure 5.2, overall, these themes include most of the data collected. They account for around 80% of the contributions analysed. More than half of the themes present an even relative distribution of contributions between three or two cases.

Among the themes common to the three case studies, a subset satisfied the criteria to be included in the comparative study. Specifically, 12 themes—corresponding to 274 contributions—were included in the comparative study. Hence, the comparative study considered the challenges and sub-challenges referring to the following themes: approach, awareness, capacity and skills, cultural heritage, data, economics-finance, interest, knowledge, participation, opposition and conflict, regulatory system and policies, and value (see the description of the themes in Table B.1).

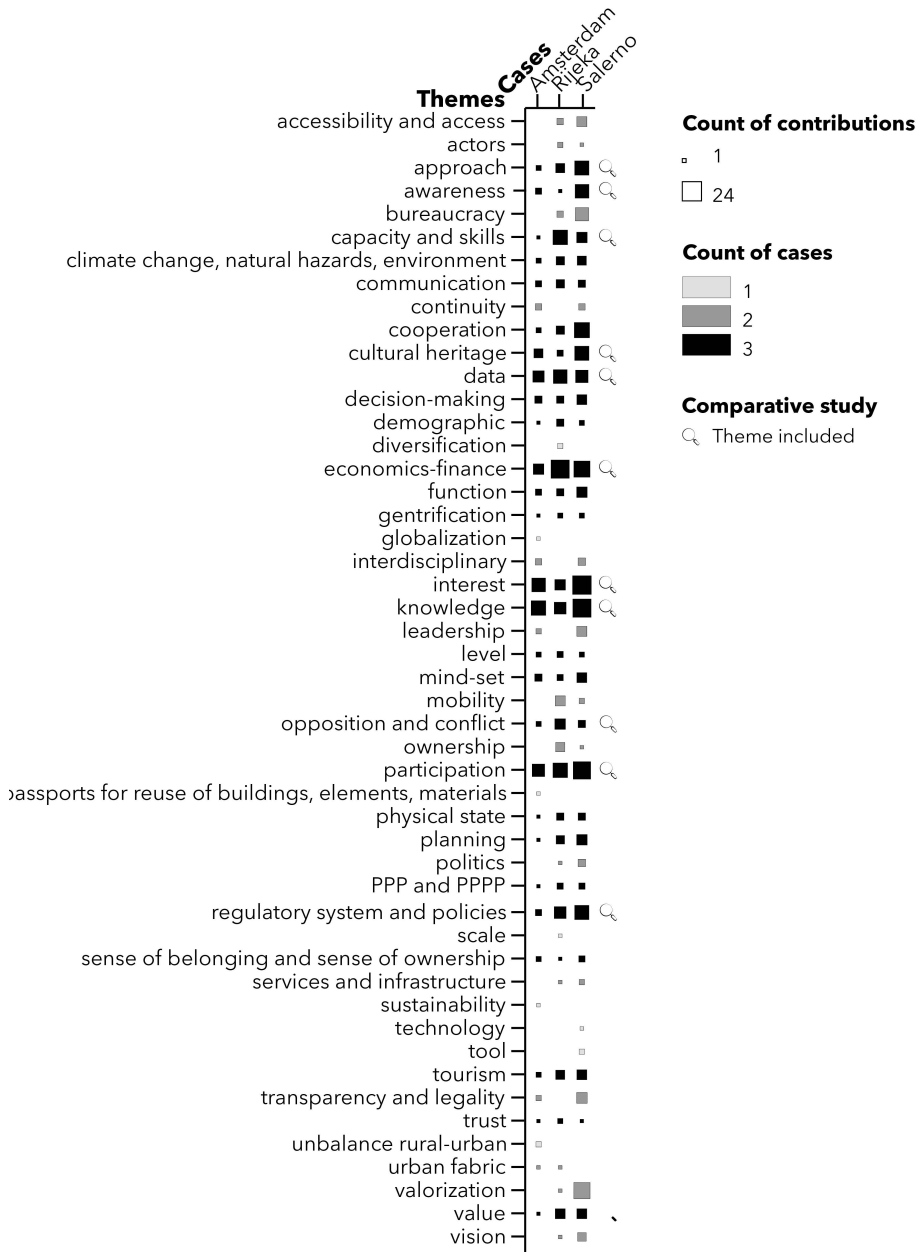


Figure 5.2. Distribution of the themes per case study.

## 5.4.2 Challenges and sub-challenges

The comparative study identified 14 challenges common to the three cases. Challenges represent higher-level findings, in other words, they synthesised the results of the cases studied. The cluster identified sub-challenges; thus, further abstracting them to gather a general insight. The common challenges are listed and detailed in Table 5.2. Within the 12 themes eligible for the comparative analysis, 10 themes include challenges that are common to the three cases. These common challenges refer to approach, awareness, capacity and skills, cultural heritage, data, economics-finance, interest, knowledge, participation, and regulatory system and policies. These 10 clusters derived mostly from general contributions, apart from awareness-related challenges presenting a comparable number of contributions referring to the urban scale and general ones.

Overall, the 14 challenges refer either to the lack and limitation of processes of the adaptive reuse of cultural heritage or to the implementation of these processes. The general insight offered by these challenges sometimes includes in the cluster sub-challenges that are also shared among the three cases analysed. Yet, local nuances such as differences in scale might apply.

The 11 common sub-challenges are mostly related to the urban scale or general level in the three cities compared (Table 5.3). The site scale is only present for the city of Salerno. Particularly, four sub-challenges are represented in all three scales. The first of these sub-challenges is the lack of local expertise and skilled tradespeople.

The other three sub-challenges concern participation: namely, the lack of participatory decision-making and co-planning or conditions for them; the lack of or limited participation, low willingness to participate; and the lack of or limited representation of certain groups such as citizens. The general trend for sub-challenges also identified at the site scale in a case is to be also identified at the urban scale and/or general level in the same city. An exception to this trend is represented by the low willingness to participate. This sub-challenge is solely identified at the site scale in Salerno.

**Table 5.2.** Common challenges to the adaptive reuse of cultural heritage.

Theme	Challenge	Brief description <sup>2</sup>
Approach	Shortcomings of current approaches	Limitations are perceived in the ways currently adopted in the adaptive reuse of cultural heritage and related processes, e.g. public-private partnerships
Awareness	Lack of or limited awareness	Absence or limitations are identified in the concern about the adaptive reuse of cultural heritage and realization of its value and related aspects, e.g. energy efficiency
Capacity and skills	Lack of capacity	Shortage or absence of capacity for the adaptive reuse of cultural heritage
Cultural heritage	Interpretation of cultural heritage and heritage sector	Challenges posed by the conceptualization of and opinions about heritage, its significance, and the heritage sector
Data	Data management issues	Challenges derived from the need to ensure findability, accessibility, interoperability, and reusability of (available) data
Economics-finance	Size of costs (estimated/perceived)	Magnitude of the costs perceived, estimated, or factual associated with the adaptive reuse of cultural heritage or specific phases, e.g. maintenance
Interest	Conflicting/different/diverging interests	Mismatch in the concerns for and advantages/benefits foreseen or derived from the adaptive reuse of cultural heritage
Interest	Lack of or limited interest	Missing or low concerns for the adaptive reuse of cultural heritage
Knowledge	Knowledge production	Production and creation of an understanding of and information about heritage, adaptive reuse, and their context
Knowledge	Lack of knowledge	Missing understanding and information related to heritage, adaptive reuse, and their context
Participation	Absent or limited participatory processes	Missing or scarce participation in the adaptive reuse of cultural heritage and related processes
Participation	Implementation of participatory practices	Difficulties encountered in the implementation of participatory processes
Regulatory system and policies	Compliance with regulatory, policy, and legislative documents	Compliance with specific requests of the regulatory system and policy or their implementation

<sup>2</sup>Descriptions are partially adapted from Pintossi et al. (2021b).



Table 5.3. Common sub-challenges.

Theme	Challenge	Sub-challenge	Case		Amsterdam			Rijeka			Salerno			
			Scale <sup>3</sup>	N <sup>4</sup>	S	U	G	S	U	G	S	U	G	
Approach	Shortcomings of current approaches	Need of change		10										
Awareness	Lack of or limited awareness	Lack of or limited awareness on specific processes or aspects		7										
Capacity and skills	Lack of capacity	Lack of local expertise and skilled tradespeople		8										
Data	Data management issues	Lack of limited findability, accessibility, interoperability, and/or reusability		17										
Economics-finance	Estimated or perceived size of costs	Size of costs of intervention		4										
Interest	Conflicting/different/diverging interests	Conflicting interests among stakeholders		11										
Interest	Conflicting/different/diverging interests	Generic conflict		5										
Knowledge	Lack of knowledge	Lack of knowledge about the heritage resources		8										
Participation	Absent or limited participatory processes	Lack of participatory decision-making/co-planning or conditions for them		10										
Participation	Implementation of participatory practices	Lack of or limited participation, low willingness to participate		9										
Participation	Implementation of participatory practices	Lack of or limited representation of certain groups, e.g. community, citizens		7										

<sup>3</sup> S stands for site scale, U for urban scale, and G for general.

<sup>4</sup> N stands for the number of contributions reporting such sub-challenge.

### 5.4.3 Challenges and SDGs

Addressing the challenges of the ARCH has a twofold contribution to sustainable development. On the one hand, it facilitates the adoption and implementation of adaptive reuse which has proven to benefit the four dimensions of sustainable development, i.e. cultural, economic, environmental, and social dimensions (Bullen & Love, 2011c, 2011b; Langston et al., 2008; Yung & Chan, 2012). On the other hand, these challenges, if addressed, can impact sustainable development by contributing to achieving some SDGs (Table 5.4).

Overall, addressing the identified challenges chiefly contributes to “make cities and human settlements safe, resilient and sustainable” (Goal 11) and “ensure sustainable consumption and production patterns” (Goal 12) by facilitating the ARCH. This facilitation “strengthen[s] efforts to protect and safeguard the world’s cultural and natural heritage” (Target 11.4) and “... reduce[s] waste generation through prevention, reduction, recycling and reuse” (Target 12.5). In fact, these two goals are related in general to the ARCH, a strategy that conserves heritage, hence averting demolition waste production and reusing the heritage resource by giving them a new purpose.

Furthermore, addressing the participation-related challenges could likely impact three additional SDGs, besides Goal 11 and Goal 12. As it can be seen in Table 5.4, firstly, addressing these challenges might positively impact the achievement of gender equality (Goal 5). Secondly, it can benefit the reduction of inequalities (Goal 10). Thirdly, it can promote inclusive societies for sustainable development (Goal 16). For example, overcoming the participatory-related challenges of the ARCH, e.g. by introducing such practices, could also ensure the participation of women and girls (target 5.5 of SDG 5) as well as the empowerment and promotion of inclusion irrespective of any status (target 10.2 of SDG 10). Additionally, raising awareness about the ARCH also aligns with raising awareness on climate change mitigation and adaptation (target 13.3 of SDG 13) since the ARCH is recognized as one strategy to mitigate climate change and introduce adaptation solutions within the built environment (Fatorić & Egberts, 2020; Yung & Chan, 2012).

Table 5.4. SDGs that are impacted by addressing the common challenges.

Challenge	SDGs <sup>5</sup>													N
	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	7 AFFORDABLE AND CLEAN ENERGY	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRIAL INNOVATION AND INFRASTRUCTURE	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION				
Shortcomings of current approaches				■							■			3
Lack of or limited awareness													■	3
Lack of capacity		■												4
Interpretation of cultural heritage and heritage sector														2
Management of cultural heritage														2
Data management issues														2
Amount of costs (estimated/perceived)													■	3
Conflicting/different/diverging interests														2
Lack of or limited interest														2
Knowledge production														2
Lack of knowledge														2
Absent or limited participatory processes														5
Implementation of participatory practices														5
Compliance with regulatory, policy, and legislative documents														4
N	1	1	2	1	1	1	1	3	14	14	14	1	1	-

<sup>5</sup> In general, addressing the identified challenges does not directly benefit six of the SDGs: “no poverty”, “no hunger”, “clear water and sanitation”, “life below water”, “life on land”, and “partnership for the Goals”. Therefore, these SDGs are excluded from the table.

#### 5.4.4 Challenges worldwide

Arguably, some of the common challenges can apply to other regions. Four of the challenges identified by the present research as European are also reported by or very similar to those revealed by the literature based on studies conducted in other regions. Therefore, some of the common challenges are likely to apply also in Asia, Oceania, and North America.

Among the 14 European challenges, four are also identified in cases from other regions (Table 5.5). The first of such challenges is the lack of awareness. In Australia, public awareness about adaptive reuse is a barrier according to architects, developers and building managers (Bullen & Love, 2011b). The second challenge likely to apply to other regions is the lack of capacity. It is also found in studies investigating New South Wales, Australia; the metropolitan area of Perth, Australia; the city of Whanganui, New Zealand; and Ontario, Canada (Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016; Shipley et al., 2006). These studies considered the experiences of architects, developers, engineers, building managers, heritage professionals, and representatives of the local government council. The third challenge also identified in other regions relates to the costs of adaptive reuse. This barrier is reported in studies conducted in Asia, Europe, North America, and Oceania. Specifically, these studies investigated cases in Australia, Canada, Hong Kong, the United States of America, and Portugal; some of these studies interviewed architects, developers, project managers, but also heritage consultants, government officials and NGOs in the Hong Kong case. This challenge is also reported in Douglas' handbook about building adaptation (2006), a reference frequently cited in the literature on the ARCH. Finally, the fourth transregional challenge, the lack of knowledge, refers also to the availability of reliable information that is an issue identified in New South Wales, Australia, interviewing architects and project managers (Sheila Conejos et al., 2016) and in North America (Bourne, 1996).

**Table 5.5.** European challenges, i.e. common to the European case studies analysed in this dissertation, that are likely to apply also in other world regions, and underpinned literature. The challenges indicated with an asterisk are akin to challenges found in the literature.

"European" challenge	Region considered in the literature <sup>6</sup>						References <sup>7</sup>
	Af	As	Eu	NA	Oc	SA	
Lack of awareness					▪		(Bullen & Love, 2011b)
Lack of capacity				▪	▪		(Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016; Douglas, 2006; Shipley et al., 2006)
Costs		▪	▪	▪	▪		(Sheila Conejos et al., 2016; Douglas, 2006; Elrod & Fortenberry, 2017a; Fernandes et al., 2020; Shipley et al., 2006; Tan et al., 2018; Yung & Chan, 2012)
Lack of knowledge				▪	▪		(Bourne, 1996; Sheila Conejos et al., 2016)
*Compliance with regulatory, policy, and legislative documents (in the literature as safety requirement)				▪	▪		(Aigwi et al., 2018; Bullen & Love, 2011b; Clark, 2013; Sheila Conejos et al., 2016; Douglas, 2006; Shipley et al., 2006)
*Interpretation of cultural heritage and the heritage sector (in the literature as minimization of change)		▪		▪	▪		(Douglas, 2006; Mehr et al., 2017; Shipley et al., 2006; Yung & Chan, 2012)
*Interpretation of cultural heritage and the heritage sector (in the literature as prevention of values loss)		▪		▪	▪		(Mehr et al., 2017; Shipley et al., 2006; Yung & Chan, 2012)

<sup>6</sup> As=Asia, Af=Africa, Eu=Europe, NA= North America, Oc= Oceania, SA= South America.

<sup>7</sup> Some references identify challenges for adaptive reuse in general and not specifically for the reuse of heritage. Furthermore, Douglas, 2006 is an handbook with no specific geographic focus.

Two additional European challenges present an affinity with challenges that were identified in the literature investigating other regions, although the nuances between the results of the present research and literature findings suggest a more cautious relation (Table 5.5). The first of these challenges is compliance with regulatory, policy, and legislative documents. Although this challenge might comprise compliance with safety requirements, this is not specifically identified in the three European cases cities as it was in Oceania and North America (Aigwi et al., 2018; Bullen & Love, 2011b; Sheila Conejos et al., 2016; Shipley et al., 2006) as well in Douglas' handbook (2006). The second European challenge with less affinity with findings from the literature is the interpretation of cultural heritage and the heritage sector. This European challenge also refers to heritage significance which relates to the values of heritage. In the literature, the prevention of values loss and the minimization of change, both intertwined with heritage significance, are mentioned as obstacles to the ARCH. These two obstacles are identified in Asia, North America, and Oceania (Mehr et al., 2017; Shipley et al., 2006; Yung & Chan, 2012).

## 5.5 Discussion and conclusions

To contribute to theorising the challenges to the ARCH, the present research draws from a cross-territorial comparative study of challenges identified from the stakeholders' perspective within Europe. On the general level, a trend was identified focusing on the common challenges of adaptive reuse. It is likely that the common issues, identified by the comparative study, are i) shortcomings of current approaches, ii) lack of or limited awareness, iii) lack of capacity, iv) interpretation of cultural heritage and heritage sector, v) management of cultural heritage, vi) data management issues, vii) amount of costs (estimated/perceived), viii) conflicting/different/diverging interests among/ of stakeholders, ix) lack of or limited interest, x) knowledge production, xi) lack of knowledge, xii) absent or limited participatory processes, xiii) implementation of participatory practices, and xiv) compliance with regulatory, policy, and legislative documents. These issues are identified in three diverse European cases, which suggests that they can be European challenges, since they cut across diverse socio-economic-political contexts and scales.

Arguably, some of these challenges can apply to other regions. The findings suggest that out of the 14 common challenges identified by the comparative study, 4 seem to be encountered in multiple world regions, hence they are not regional issues. These challenges are namely, i) lack of awareness, ii) lack of capacity, iii) estimated/perceived costs, and iv) lack of knowledge. In general, these cross-regional challenges are identified in Asia, North America, and Oceania. They might also be encountered in the ARCH in Africa and South America, but cases reporting such common challenges in these two regions were not encountered. Furthermore, two additional challenges—the interpretation of cultural heritage and the compliance with regulatory, policy, and legislative documents—have affinities and similarities with obstacles also identified respectively in Oceania and North America, and in Asia, North America, and Oceania. The remaining eight common challenges were currently only identified within the European region: namely, i) shortcomings of the current approaches, ii) management of cultural heritage, iii) data management issues, iv) conflicting, different, diverging interests, v) lack of or limited interest, vi) knowledge production, vii) absent or limited participatory processes, and viii) implementation of participatory practices.

Furthering the understanding of challenges encountered in the ARCH provides evidence and knowledge with a threefold implication. Firstly, it enables the definition of a framework for these challenges (Table 5.2). Secondly, it informs future implementations of adaptive reuse as well as policy and decision making. Particularly, the policy-making at multiple governmental levels can be informed by this more general insight. Thirdly, solutions might be drawn by examining within the wider regional context of Europe or even considering other regions where these challenges seem also to apply.

The research presents three main limitations; namely, it is limited to cross-sectional analysis, it might be affected by measurement bias, and its generalizability is subject to certain caution. Firstly, whilst this research lacks to perform a cross-longitudinal analysis, looking at the publication date of articles reporting some of the common challenges, it can be argued that some challenges have been already identified in the 2010s and a couple of them in the 90s and 2000s. Future research could integrate a cross-longitudinal analysis to further the understanding of challenges to the ARCH by including the temporal dimension. Such a cross-longitudinal

analysis could also reveal the dynamic of challenges over time. Secondly, the measurement bias could be due to different understandings among participants within a country and among countries although the official working language was the same for the three data collections, i.e. English. Thirdly, this research presents a small-N study comparing European cities that represent a varied spectrum of contexts. This variety suggests that the cases represent various contexts enabling a certain generalizability of the findings. However, the generalizability of the findings is subject to further research. Future research can boost the generalization of the findings by repeating the cross-sectional analysis as a Large-N study considering as cases more cities both in the European region and other world regions as well as increasing the number of cases considered within each city, to robust the general insight suggested by this research. It is suggested that a large-N study possibility adopts the same methodology used in this research to enhance the comparability while reducing possible construct biases.

Addressing the challenges can benefit adaptive reuse and facilitate the reuse of cultural heritage. Overcoming these challenges would also benefit sustainable development. On the one hand, the ARCH can benefit sustainable development, for example, by conserving the values associated with heritage (Bullen & Love, 2011b; Remøy, 2014) and retaining embodied energy (Foster, 2020). On the other hand, some challenges to the ARCH relate to some of the SDGs (Table 5.4). In general, not only addressing these challenges would contribute to making human settlements safe, resilient, and sustainable (SDG 11) and ensuring sustainable consumption and production patterns (SDG 12), but also could have a positive impact on fostering gender equality (SGD 5), reducing inequality (SDG 10), and building an inclusive society for sustainable development (SDG 13).

By comparing the cities of Amsterdam, Rijeka, and Salerno, a first general insight was gathered on common challenges for the ARCH. Likely, some of these issues also apply in other regions. "Responding to challenges in creative ways can result in opportunities that might not otherwise be identified or realised." (Clark, 2013, p. 8). Particularly, overcoming such challenges can facilitate the adoption and implementation of adaptive reuse, therefore, potentially positively contributing to pursuing more sustainable and climate-friendly urban environments. As pointed out in the



introduction, the ARCH entails cultural, environmental, economic, and social benefits. Hence, enabling the ARCH could contribute to achieving the SDGs and the objectives set forward by policies such as the European Green Deal.

5

This chapter presented the challenges common to the three case studies presented in detail in the previous chapters: the European cities of Amsterdam in The Netherlands; Rijeka in Croatia; and Salerno in Italy. These common challenges are derived from a cross-sectional comparative study. As they were identified in diverse socio-cultural-economic-political contexts, these challenges may be representative of the European region. Furthermore, some of these challenges also applied to other regions since they were reported in the literature considering case studies from Asia, North America, and Oceania. The common challenges are also related to the Sustainable Development Goals to identify which could benefit them by being addressed. Although challenges are context-specific and change over time, this comparative study contributes to enabling the generalization of case-based findings to abstract them through a higher-level synthesis (Eisenack et al., 2014). Therefore, this dissertation contributes to developing a theoretical framework for the challenges to the adaptive reuse of cultural heritage. The following chapter presents the overarching conclusions derived from this doctoral research and sets out recommendations for future research.

## Chapter 6

### Conclusions and recommendations

This chapter provides overarching conclusions to this dissertation. It explains the significance and contributions of the research conducted while recognizing its limitations. Finally, it makes recommendations for future research to further the findings presented in this dissertation. Therefore, this chapter complements the specific discussions and conclusions already presented in the previous chapters.

## 6.1 Research statement

This research aimed to expand the knowledge on the challenges to the adaptive reuse of cultural heritage and, contextually, identify potential solutions. This thesis has further investigated the factors, particularly the challenges, influencing the adaptive reuse of cultural heritage. This investigation expanded the range of influencing factors already presented in the literature. While this dissertation has produced further knowledge, it has also unveiled the need to further develop its findings both in breadth and depth.

Specifically, this doctoral research has studied the challenges to cultural heritage adaptive reuse within the European region by engaging a wide variety of stakeholders and adopting a landscape approach and multiscale perspective. It also proposed solutions to these challenges within each case study. Subsequently, the research uncovered the challenges common to the case studies analysed through a comparative study and related them to the SDGs.

In performing this research, the gaps unveiled in the existing literature were filled. Specifically, this research included also other stakeholders of the adaptive reuse of cultural heritage in the identification of challenges and solutions. For example, representatives of local authorities and NGOs managing reused heritage were involved in the research process. Thus, this research complements the point of view of architects and project managers, who are the stakeholders often engaged in the literature. Moreover, this research considered a multiscale perspective and adopted a landscape approach in identifying challenges and solutions in each case study. It focused on both the site and the urban scales, along with the general. It adopted the HUL approach in the identification framework guiding the workshop participants. Additionally, this research analysed three case studies from the European region; thus, expanding the pool of contexts where challenges have been identified. This research complements the findings of case studies from Asia, North America, and Oceania and the European studies focusing on specific heritage typologies, such as industrial heritage. In sum, this research seized the opportunity to enrich the literature on the challenges to the adaptive reuse of cultural heritage by addressing the gaps concerning stakeholders, scales, and geographical contexts (§1.2 and §1.3). Thus, it fills the gaps unveiled in the literature.

The findings of this research have three main implications. The findings suggest that a wider range of issues affects the adaptive reuse of cultural heritage than the ones already presented in the literature. For example, issues relating to stakeholder participation have been identified as challenges in the three case studies. Therefore, broadening the variety of stakeholders involved in producing knowledge on these challenges and adopting a multiscale perspective might expand the range of issues to be dealt with in the adaptive reuse of cultural heritage. Moreover, the findings contribute to developing a theoretical framework for the challenges faced by heritage reuse, based on the insight drawn from the comparative study. Finally, the findings also suggest that addressing these challenges may contribute to the efforts to achieve the SDGs.

Performing this research has proven the need for additional research. To potentially refine the findings presented, the base of stakeholders involved in identifying challenges and solutions could be further expanded as the number of case studies analysed. This expansion could also possibly result in additional issues to be considered in the adaptive reuse of cultural heritage. Moreover, closely investigating further the site and urban scales and the general level could deepen the understanding of the challenges and solutions at these various levels and how these scales relate to the adaptive reuse of cultural heritage. Subsequently, the additional evidence gathered could enrich the theoretical framework for challenges that this dissertation has started to develop.

## 6.2 Research relevance

The scientific relevance of this research is threefold. First, its relevance stems from the insights that can contribute to theorising the challenges to the adaptive reuse of cultural heritage. This contribution derives from the synthesis of the findings from the case studies that enables some generalization. Second, some of the challenges identified by this research were already reported in the literature, although some nuanced differences may apply. Notably, the studies in the literature are characterised by different methods, stakeholders' groups, and geographical contexts (§1.2). Therefore, this research confirms some conclusions from previous studies on the challenges to the cultural heritage adaptive reuse while adopting a different methodology; thus, proving their reliability and validity. This confirmation is an argument in

favour of the development of a theoretical framework for challenges to the adaptive reuse of cultural heritage. Third, the findings from each case study are scientifically relevant to the study of the adaptive reuse of cultural heritage within the context of the cities investigated. Therefore, this research is scientifically relevant both at the theoretical and the case study level.

The societal relevance of this research stems from the assistance that the findings can provide to implement the adaptive reuse of cultural heritage. Identifying factors influencing heritage reuse, particularly the negative factors hampering such processes, can facilitate the implementation of these reuse practices by informing stakeholders and identifying solutions. For example, the evidence provided can inform policy-makers in developing policies and strategies to support the adoption of adaptive reuse. Furthermore, practitioners, such as architects, and communities implementing the adaptive reuse of cultural heritage can refer to these findings both to mitigate or avoid such challenges and to address their challenges. Notably, some of these findings might be transferable as some challenges are common across diverse socio-cultural-economic-political contexts and scales, as suggested by the comparative study. Moreover, stakeholders might adopt the methodology used in this research to identify challenges and solutions in their context or process of adaptive reuse. Ultimately, by likely enabling the adaptive reuse of cultural heritage, as just indicated, this research can contribute to heritage conservation and, therefore, actuating the potential of cultural heritage for sustainable development and circular economy. Therefore, this dissertation also presents a societal relevance.

### 6.3 Research contribution and overview of the research questions

This doctoral research aimed at identifying the factors influencing the process of heritage reuse to enable it. Hence, the main research question asks what factors influence the process of cultural heritage adaptive reuse. Three sub-questions guided the research towards answering this main research question and, thus, achieving the objective set for this research (§1.4).

The first sub-question asks: **what factors negatively affect the process of cultural heritage adaptive reuse?**

This research revealed a wide spectrum of challenges to the adaptive reuse of cultural heritage. The challenges identified span from the site to the urban level while some are considered general issues. This dissertation presents findings derived by expanding the range of stakeholders involved in identifying challenges and adopting a HUL-based and multiscale perspective. A detailed account of the challenges identified is reported in Chapters 2 to 4 per case study.

Overall, the analysis of the case studies revealed five aspects concerning these challenges. First, the challenges identified expand the range of challenges reported in the literature. This range mainly concerns compliance with legal requirements and design and technical aspects (Bullen & Love, 2011c; Sheila Conejos et al., 2016; Douglas, 2006), whereas these findings report issues concerning *inter alia* knowledge production, implementation of participation, and cooperation among stakeholders. Second, some of the challenges already reported in the literature were also identified by this research. Yet, within the European cases considered, these challenges were less frequently mentioned and/or more generally formulated than in the literature considering cases in other world regions. Third, challenges revealed the interconnection of the adaptive reuse of cultural heritage with the ecosystems where it occurs and other phenomena, e.g. tourism. Thus, some challenges are not specific to the adaptive reuse of cultural heritage. Fourth, some challenges relate to or interrelate with each other, e.g. by causal relations. Fifth, some challenges occur at multiple scales, suggesting the possibility of intervention at multiple levels in addressing them. Therefore, the data collection approach adopted—multiscale and landscape-stakeholder-based—enabled the identification of a wide spectrum of challenges.

Mapping the challenges contributes to understanding what negatively affects the adaptive reuse of cultural heritage in the three case studies investigated. This provides evidence of the issues hampering, hindering, or preventing the adaptive reuse of cultural heritage. Furthermore, these findings may be applicable in places that are similar to the case studies analysed, despite the three cities belong to the European region.

The second sub-question asks: **how to overcome the negative factors identified?**

Contextually to the identification of the challenges to the cultural heritage adaptive reuse, the participants proposed potential solutions to overcome some of these negative factors. Solutions were proposed by the participants both as plausible suggestions or they have already been implemented, as they were drawn from experiences both within the adaptive reuse of cultural heritage or other processes. These solutions are presented in detail in Chapters 2 to 4. Solutions span from policy-making to strategies, actions, and tools. They contribute to creating a favourable environment for the adaptive reuse of cultural heritage or facilitating/enabling it.

Overall, the solutions identified are characterized by two aspects. First, some solutions can address multiple challenges. Second, some solutions were based on transferable knowledge drawn from examples belonging to other processes or contexts. Hence, some solutions are not specific to the adaptive reuse of cultural heritage.

In general, the suggested solutions should be tested to verify their applicability, especially the ones that have not yet been implemented in the cities investigated. For the solutions based on knowledge transfer, their feasibility and usefulness need to be verified both within the same context or across contexts. Yet, the solutions identified by the participants in the workshops are a repository to inspire stakeholders in implementing the adaptive reuse of cultural heritage in the three case studies and might also be transferable to other contexts.

Proposing solutions to address the challenges identified contributes to solving or addressing such issues. Therefore, this identification enables the adoption and implementation of the adaptive reuse of cultural heritage.

The third sub-question asks: **what trends are recognized among these factors?**

Some challenges are common to the three case studies analysed. These common challenges might be challenges applicable to the European region since they are identified in three European cities diverse in terms of scale and socio-cultural-economic-political context. Chapter 5 reports in detail these common challenges. Notably, it seems that some of these



common challenges might be cross-regional issues as they are mentioned in literature reporting case studies from other regions. These cases are from Asia, North America, and Oceania. These cross-regional challenges might apply also to Africa and South America, but case studies within these two regions were not retrieved in the literature.

Determine these common challenges is a first step towards developing a framework for the challenges to the adaptive reuse of cultural heritage. The synthesis derived from the comparative study provides a more general insight that can inform practice and multiple governmental levels of policy-making.

Finally, some of the common challenges identified relate to some of the SDGs. Therefore, addressing these challenges could contribute to the efforts to achieve these goals, such as ensuring sustainable consumption and production patterns.

Determining these common challenges contributes to developing a theoretical framework for the challenges to the adaptive reuse of cultural heritage. This synthesis produces a more general insight that can enhance the understanding of the adaptive reuse of cultural heritage and its adoption and implementation while revealing trends within its challenges.

The main question asks: **what factors influence the process of cultural heritage adaptive reuse?**

This doctoral research identified a wide variety of factors affecting the adaptive reuse of cultural heritage. Some of these factors are interconnected and interdependent. Initially, the negative factors slowing, hindering, or hampering this process were identified per each case study. This identification expanded the range of challenges to the cultural heritage adaptive reuse already known while also confirming the applicability of some of the known ones within the case studies presented in this dissertation. Challenges to the adaptive reuse of cultural heritage are identified at the site scale, at the urban scale, and as general issues by the stakeholders. Contextually, positive factors to enable the adaptive reuse of cultural heritage were also identified. These factors are solutions to overcome the identified challenges. Among these solutions, some can address multiple challenges, some are based on transferable knowledge drawn from other contexts or processes. Subsequently, a synthesis was provided by identifying the challenges common to the three case studies to gain a more general insight. This general insight contributes to further

advancing the knowledge on the challenges to the adaptive reuse of cultural heritage. Specifically, this general insight is a first step to developing a theoretical framework for these challenges. Finally, some of the common challenges identified relate to some of the SDGs, suggesting that addressing such issues might positively contribute to sustainable development.

The mapping of multi-scale challenges and solutions and the general insight derived for the common challenges contribute to advancing the knowledge on the adaptive reuse of cultural heritage. Particularly, this knowledge can contribute to enabling the adoption and implementation of heritage reuse and to a certain extent to achieving some of the SDGs.

## 6.4 Research Limitations

This doctoral research is subject to several limitations, some of them have been already reported in Chapters 2 to 5.

First, the research has identified challenges to the adaptive reuse of cultural heritage and their solutions based on a static study. This has a twofold implication. First, the change of the challenges over time is not considered. Second, the evolving and dynamic nature of the system where the reuse processes take place is not considered. Therefore, the static nature of this research offers an overview of challenges and solutions within a specific temporal context.

Second, the research is limited by the variety of stakeholders involved in conducting the studies. This exploratory research aimed at broadening the variety of stakeholders involved in the identification of challenges to the adaptive reuse of cultural heritage. Yet, some groups of stakeholders, such as citizens, were underrepresented or absent in the workshops. For example, although some of the participants invited to the workshops were also citizens of the case study, they were taking part in the research chiefly for their experience in the adaptive reuse of cultural heritage and related domains. Therefore, civic engagement was limited.

Finally, the transferability of the findings and their generalizability are limited and demand additional research. This limitation is the result of the combination of several characteristics and constraints of the research conducted. Among these limitations, four are mentioned here. First, a limited number of participants, the main source of data, was engaged in

the identification of challenges and solutions. Second, few case studies were investigated within the European region. Third, within each case, one example for the site scale was considered. Fourth, the generalization of the findings through the comparative study is limited by the diversity, such as in policy frameworks, across the case studies. Hence, some of the challenges and solutions likely apply solely to specific case studies.

These limitations, coupled with the ones detailed in the previous chapters, therefore, contribute to identifying gaps to be filled. In other words, the present dissertation has started to survey the challenges affecting the adaptive reuse of cultural heritage and more research needs to be conducted.

## 6.5 Future research recommendations

In Chapters 2 to 4, challenges to the adaptive reuse of cultural heritage were identified and solutions to overcome them were either identified or suggested with an exploratory approach. The findings presented in these chapters are the first step in surveying and understanding the challenges and therefore devising solutions. These findings can be further investigated by repeating the study in each case expanding the range of stakeholders involved in the identification of challenges and solutions. Additionally, the number of sites considered to exemplify the site scale could also be increased to advance the findings presented in this dissertation. Expanding the range of stakeholders and increasing the number of sites would allow developing the breadth of this research, potentially refining the mapping of the challenges encountered in the adaptive reuse of cultural heritage within each case study; and therefore, enriching the comparative study. Moreover, challenges could be explained to determine from where they stem and how they change, developing the depth of this research. This knowledge would inform the solving of these challenges. In addition, to address these challenges, it would be useful to categorise them as endogenous and exogenous to the process of adaptive reuse. This categorisation could enable to identify where and how these challenges need to be addressed. Additionally, it would be beneficial to determine which challenges are specific to adaptive reuse processes. This research suggests that some challenges are particular to heritage reuse while others are also encountered in other processes. For example, participation-related challenges are also

experienced in heritage management or urban planning. Therefore, the identification of solutions can be tailored for heritage reuse-specific challenges and challenges shared with other processes.

Other interesting developments for studying the challenges to the adaptive reuse of cultural heritage would be to i) determine the interrelationship among the challenges, such as causal relation or co-occurrence; ii) appraise their importance in limiting or hampering heritage reuse by establishing a hierarchy; iii) demonstrate when the challenges occur in the process of heritage reuse, being the phases of the process initiation, planning and design, construction, and operation and maintenance (Geraedts & Wamelink, 2009; Martani, 2015); iv) investigate in-depth the various scales where the challenges are encountered and the relationships among scales; and iv) conduct a stakeholder-specific investigation of these challenges to determine if and how they are stakeholder-dependant, which challenges are transversal to stakeholder groups, and the presence of conflicting perspectives. This additional knowledge would allow for an in-depth understanding of the challenges affecting the adaptive reuse of cultural heritage.

Additional research could also investigate specifically the stakeholders and tools mentioned in and the scales of the challenges and solutions. Stakeholders and tools were mapped only for the city of Amsterdam. Future research could further map and in-depth explore the role of stakeholders within challenges and solutions to better understand such factors. At the same time, this could result in the confirmation or update of the spectrum of stakeholders of the adaptive reuse of cultural heritage. Further investigating the tools mentioned in challenges and solutions can both inform their adoption and deepen the understanding of such tools. Moreover, an in-depth analysis of the stakeholders of the adaptive reuse could also contribute to further understanding challenges and solutions. Specifically, identifying the specific roles of stakeholders, their goals, interests, and responsibilities in the adaptive reuse could allow linking these characteristics with the challenges and solutions that they identify. Future research could study the challenges per stakeholder group, whereas this research reached consensus among them. Finally, in some case studies, the participants' contributions; therefore, the dataset, are skewed towards the urban scale and general factors. Additional research could further investigate these cases to determine the reason underpinning this observation.

The comparative study contributed to initiating the theorisation of challenges to the adaptive reuse of cultural heritage by synthesising the findings from the single case studies. Yet, the knowledge on these challenges would be further advanced by a cross-sectional comparison performed as a large-N study, i.e. increasing the number of human settlements considered. This would refine the framework of challenges formulated in Chapter 5. Furthermore, the research could investigate the transferability of the formulated framework of challenges and determine how contextual factors influence this (refined) framework. Additionally, the literature on the challenges to the adaptive reuse of cultural heritage could be expanded with cross-longitudinal research within a case and across cases. In sum, the theoretical framework of challenges to adaptive reuse could be further developed and validated by expanding its geographical base, including the temporal dimension, and determining how contextual factors influence it.

Future research could also investigate the adaptive reuse of cultural heritage and its challenges in relation to the SDGs. This research line stems from the preliminary findings from further analysing the results of the comparative study. This analysis revealed the likely association of the common challenges with the SDGs. Additional research is needed to evaluate how and to what extent the adaptive reuse of cultural heritage and addressing its challenges (can) contribute to achieving the SDGs. This gained insight could help further assess the contribution of the adaptive reuse of cultural heritage to sustainable development.

Finally, research is recommended to further knowledge about the implementation of adaptive reuse in the circular model. Specifically, additional research could investigate the aspects about energy within the adaptive reuse of cultural heritage such as reduction of energy consumption and demand, increase in energy efficiency, and close the energy loop related to heritage reuse. Similarly, additional research could further the economic/financial issues related to adaptive reuse. This could also help address the economic and financial-related challenges identified in the present research while also revealing challenges specific to the intentional implementation of the adaptive reuse of cultural heritage in the circular model.

## Conclusions and recommendations

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## Appendices

# Appendix A: Additional details about Materials and Methods

### Materials and Methods

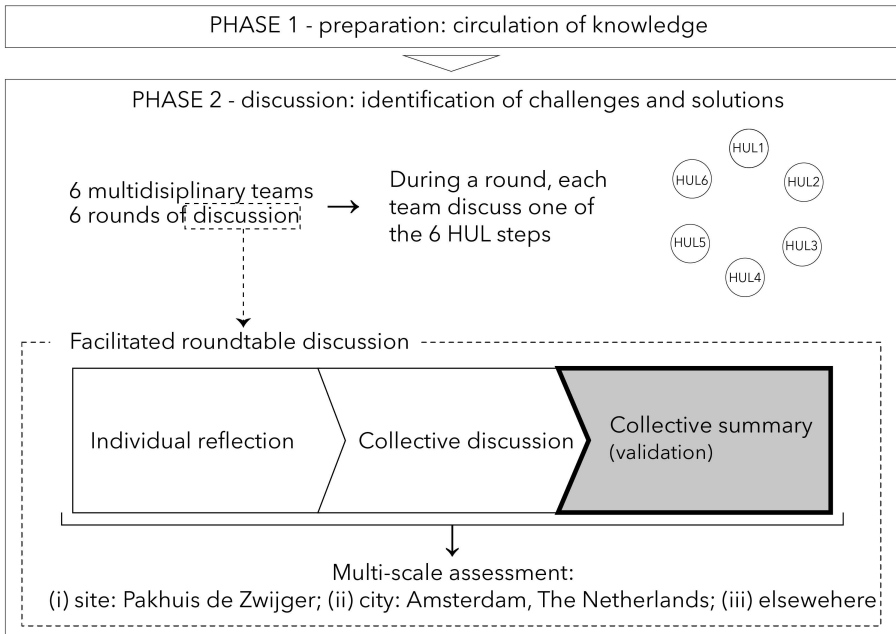
The data collection was carried out in a HUL workshop, meaning a workshop following the approach implementing the UNESCO 2011 Recommendation on the Historic Urban Landscape (UNESCO, 2011) held in 2018 in the city of Amsterdam, the Netherlands. This approach supports the integration of “policies and practices of conservation of the built environment into the wider goals of urban development in respect of the inherited values and traditions of different cultural contexts” (*World Heritage Centre - Recommendation on the Historic Urban Landscape*, n.d.). The HUL approach is holistic since it considers the various dimensions composing the landscape, and it is integrated because of its interdisciplinary perspective (Ginzarly et al., 2019).

### Data collection

The “HUL workshop” was articulated in two parts: preparation and discussion (Figure A.1). During the preparation, the participants in the workshop shared knowledge on the city of Amsterdam, Pakhuis de Zwijger, and current trends and initiatives regarding heritage, circular economy, sustainability, and adaptive reuse practices in the city.

The identification of challenges and solutions took place as six rounds of facilitated roundtable discussion. During each round, participants grouped in multi-disciplinary teams identified challenges and solutions focusing on one of the HUL steps. Particularly, each roundtable discussion entailed an individual reflection, collective discussion, and a collective summary with validation of the contributions (Figure A.1). The qualitative data collected includes written notes on these contributions. This study solely analyses the dataset including the contributions validated by consensus by the participants during the collective summary of the roundtable discussion (Figure A.1). These contributions were agreed upon

among participants and visible to all team members when written down by the facilitators.



Note: the grey background highlights the data analysed and reported in the present study.

**Figure A.1.** Scheme of the structure of the workshop and of one round of roundtable discussion.

### Data analysis

The collected data were transcribed in a digital form, cleaned (Wickham, 2014), and prepared for the content analysis. For instance, typos were removed, and spellings were homogenized. Furthermore, some contributions lacked information about either the scale or the type of contribution. This lacking information was completed when retrievable from unambiguously corresponding notes from the individual reflection and the collective discussion (Figure A.1). Otherwise, this information was indicated as “not stated” in the transcription.



Coding

Table A.1. Content analysis: coding process and analysis techniques.

Time of coding	Coders	Type of coding	Variable coded	Num-ber of codes	Type of analysis	Sample of contributions coded
Workshop	Workshop structure	Deductive	HUL step	6 <sup>a</sup>		Individual reflection, collective discussion, collective summary
	Participants	Deductive	Scale	3 <sup>b</sup>		Individual reflection, collective discussion, collective summary
Deskwork	Authors (1 coder, 1 peer reviewer <sup>d</sup> )		Type of contribution	2 <sup>c</sup>		Individual reflection, collective discussion, collective summary
			Scale	4 <sup>e</sup>	Frequency (Thomas & Harden, 2008)	Collective summary
		Inductive	Factor	67	Frequency and thematic synthesis (Thomas & Harden, 2008). Complexity mapping (Dynamical Systems Innovation Lab, 2014)	Collective summary indicated as challenges or solutions
			Statement	38	Frequency and thematic synthesis (Thomas & Harden, 2008)	Collective summary with "not stated" as a type of contribution
		Deductive	Tool	4 <sup>f</sup>	Existence (Krippendorff, 1980)	Collective summary explicitly indicating a tool independently from the type of contribution
			Stakeholder	6 <sup>g</sup>	Existence (Krippendorff, 1980)	Collective summary explicitly indicating a stakeholder independently from the type of contribution

Deductive codes: <sup>a</sup> mapping, consensus, vulnerability, integrate, prioritize, partnership (UNESCO, 2011a), <sup>b</sup> Pakhuis de Zwijger, Amsterdam, elsewhere. <sup>c</sup> challenge, solution.  
<sup>d</sup> To increase the validity of the content analysis, the main author acted as coder and a co-author as peer reviewer (Bengtsson, 2016).  
<sup>e</sup> Added code "not stated" to the one used during the workshop. This code is used for contributions missing an indication for the variable and that were not completed based on participants' contributions in post-it and notepad notes. During the deskwork, code labels used in the workshop were reviewed to align them with the content of the contributions. Thus, the label "elsewhere" was change to "general" to better reflect the use the participants did of it.  
 Deductive codes: <sup>f</sup> civic engagement tools, knowledge and planning tools, regulatory systems, financial tools (UNESCO, 2011b).  
<sup>g</sup> public sector, private sector, civic society, knowledge sector, NGOs and third sector (Caizada, 2013; Pentahelix project, 2018).\*

## Appendix B: Description of the themes included in the comparative study

Table B.1. Description of the themes included in the comparative study.

Theme	Description <sup>6</sup>
Approach	The theme addresses the ways currently adopted in the adaptive reuse of cultural heritage and related processes, e.g. public-private partnerships
Awareness	The theme reports on the concern about the adaptive reuse of cultural heritage and realization of its value and related aspects, e.g. energy efficiency
Capacity and skills	The theme refers to the capacity for the adaptive reuse of cultural heritage
Cultural heritage	The theme encompasses the conceptualization of and opinions about heritage, its significance, and the heritage sector
Data	The theme addresses aspects relating to data, e.g. collection and management
Economics-finance	The theme covers challenges relating to economic and financial aspects of the adaptive reuse of cultural heritage, e.g. costs
Interest	The theme addresses the concerns for and advantages/benefits foreseen or derived from the adaptive reuse of cultural heritage
Knowledge	The theme refers to the understanding of and information about heritage, adaptive reuse, and their context
Opposition and conflict	The theme gathers challenges referring to opposition and conflicts encountered in the adaptive reuse of cultural heritage or by these interventions.
Participation	The theme encompasses challenges relating to participatory processes to involve in varying degrees the stakeholders of the adaptive reuse of cultural heritage
Regulatory system and policies	The theme addresses issues referring to regulatory system and policies
Value	The theme reports on issues related to heritage values and the creation of values through adaptive reuse

<sup>6</sup>Descriptions are partially adapted from Pintossi and co-workers (2021b).

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## List of acronyms

Af	Africa
ARCH	Adaptive Reuse of Cultural Heritage
As	Asia
EU	European Union
G	General
HUL	Historic Urban Landscape
ICOMOS	International Council on Monuments and Sites
ICT	Information and Communication Technology
NGO	Non-Governmental Organization
NA	North America
Oc	Oceania
S	Site scale
SA	South America
SDG	Sustainable Development Goal
U	Urban scale
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UN-Habitat	United Nations Human Settlements Programme

## List of acronyms



## Curriculum Vitæ

Nadia Pintossi was born on 24-03-1989 in Bergamo, Italy. After finishing her scientific secondary school diploma in 2008 at Liceo Scientifico Statale "Lorenzo Mascheroni" in Bergamo in Italy, she studied Building Engineering - Architecture at Politecnico di Milano at the branch in Lecco, Italy. In 2016, she graduated cum laude with a thesis proposing a design for the adaptive reuse of a former cotton mill in Parre, Italy. This master's thesis was awarded an honourable mention by Politecnico di Milano at the 4th edition of the "Best master's thesis in Building Engineering - Architecture" Award. Having joined a double degree programme, she also graduated in Building Engineering with a specialization in Structural Design at ESPT Paris in Cachan, France, in 2013. Her French master's thesis concerns the engineering of a concrete façade which entailed a six-month internship as a building site engineer. In December 2017, she started a PhD project at the Eindhoven University of Technology in Eindhoven, The Netherlands, of which the results are presented in this dissertation. As a PhD candidate, she was also a researcher in the European Horizon 2020 research project CLIC (Circular models Leveraging Investments in the Cultural heritage adaptive reuse).

Curriculum vitæ

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### Book chapter

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Cultural heritage can drive and enable sustainable development when conserved. Adaptive reuse is a proven strategy to conserve heritage, while adapting it to new uses, but still underexplored. Various were the challenges found hampering its adoption and implementation, and consequently, preventing actuating the potential of heritage for sustainable development, for specific case studies. However, the relation between challenges was seldom compared among case studies, disabling the identification of similarities and differences, nor the exchange of experiences in solving them. This doctoral research contributes to advancing the knowledge about challenges by i) engaging a wide variety of stakeholders; ii) considering European case studies; and iii) adopting a landscape approach—the Historic Urban landscape approach—with a multi-scale perspective. Challenges and possible solutions to address them are identified by a multi-case study analysis considering the cities of Amsterdam in The Netherlands, Rijeka in Croatia, and Salerno in Italy. This analysis confirms and expands the range of challenges reported in the literature. Comparing these three case studies, a general insight is drawn from identifying common challenges; thus, contributing to theorising the challenges to the adaptive reuse of cultural heritage. Examples of such challenges are the lack of knowledge, capacity, and participatory processes. Moreover, the comparative study determines whether these challenges are cross-regional and whether addressing them may contribute to achieving some Sustainable Development Goals. This research advances the understanding of heritage reuse in each case study and in general; thus, its scientific relevance. This research may assist in enabling the adoption and implementation of heritage reuse through its general insight and case-specific findings; thus, its societal relevance. For example, these findings may inform multiple governmental levels of policy-making to develop policies and strategies to support the adoption of heritage reuse; thus, actuating the potential of heritage for sustainable development.

DEPARTMENT OF THE BUILT ENVIRONMENT