CLIC

Circular models Leveraging Investments in Cultural heritage adaptive reuse

D1.5
Report on Barriers and Bottlenecks

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Deliverable 1.5

Report on Barriers and Bottlenecks

Version 1.0

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Deliverable leader:	Eindhoven University of Technology (TU/e)
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Author list:	Deniz Ikiz Kaya (TU/e), Nadia Pintossi (TU/e), Caroline A.M. Koot (TU/e), Bernard F. Colenbrander (TU/e)

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Abstract

The Deliverable D1.5 initially examines **the barriers (political, economic, social, cultural, technical, environmental, legal and administrative)** to support the adaptive reuse of cultural heritage in the context of multi-level governance, interlinking city, regional, national and EU levels of decision making. The barrier assessment is derived from the best practice and multiple case study analysis, reflecting the plurality of views from multiple stakeholders. The findings show **that the most salient barriers are governance-related, arising from lack of collaboration, cooperation and participation among a wide range of stakeholders, followed closely by economic, social and legislative barriers**. The underlying parameters of the identified barriers have also served as an initiative for **formulating policy enablers and solutions to tackle these challenges**. Following a systematic assessment of solutions suggested by local stakeholders and the usefulness and feasibility of certain policy enablers, **a set of policy-related guidelines are deduced at European, national and local policy scales.**

Partners involved in the document

(Last column of the table to be filled in after document elaboration)

Participant No	Participant organisation name	Short Name	Check if involved
1 Coordinator	CONSIGLIO NAZIONALE DELLE RICERCHE	IRISS CNR	
2	UPPSALA UNIVERSITET	UU	
3	GROUPE ICHEC - ISC SAINT-LOUIS - ISFSC	ICHEC	
4	UNIVERSITY COLLEGE LONDON	UCL	
5	TECHNISCHE UNIVERSITEIT EINDHOVEN	TU/e	X
6	UNIVERSITY OF PORTSMOUTH HIGHER EDUCATION CORPORATION	UOP	
7	UNIVERZA V NOVI GORICI	ETCAEH	
8	WIRTSCHAFTSUNIVERSITAT WIEN	WU	
9	UNIWERSYTET WARSZAWSKI	UNIWARSAW	
10	ICLEI EUROPEAN SECRETARIAT GMBH	ICLEI	
11	FACILITYLIVE OPCO SRL	FacilityLive	
12	VASTRA GOTALANDS LANS LANDSTING	VGR	
13	GRAD RIJEKA-GRADSKO VIJECE	RIJ	
14	COMUNE DI SALERNO	SA	
15	STICHTING PAKHUIS DE ZWIJGER	PAK	

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Executive Summary

Deliverable 1.5 – Aim and Objectives

This Deliverable D1.5 presents the outcomes of research carried out as part of ”Task 1.2 – Identify cultural, social, economic, institutional, legal, regulatory and administrative barriers and bottlenecks for adaptive re-use of cultural heritage at city, regional, national and EU level” within Work Package 1**.**

This deliverable initially examines **the barriers (political, economic, social, cultural, technical, environmental, legal and administrative)** to support the adaptive reuse of cultural heritage in the context of multi-level governance, interlinking city, regional, national and EU levels of decision making. The barrier assessment is derived from the best practice and multiple case study analysis, reflecting the plurality of views from multiple stakeholders. The findings show **that the most salient barriers are governance-related, arising from lack of collaboration, cooperation and participation among a wide range of stakeholders, followed closely by economic, social and legislative barriers**. The underlying parameters of the identified barriers have also served as an initiative for **formulating policy enablers and solutions to tackle these challenges**. Following a systematic assessment of solutions suggested by local stakeholders and the usefulness and feasibility of certain policy enablers, **a set of policy-related guidelines are deduced at European, national and local policy scales.**

This research **thus enhances the understanding of challenges in adaptive reuse from multiple stakeholders' perspectives, reflecting their plurality of views**. The outcomes support the numbering-up of adaptive reuse practices by **providing solutions and tools to overcome the identified challenges**. By raising awareness and building consensus on barriers among relevant actors involved in adaptive reuse, this research also promotes the transition towards a proactive attitude in adaptive reuse practices worldwide.

The critical examination of the barriers has contributed to the identification of the underlying parameters and suggested solutions from stakeholders, which have later guided the formulation of policy-related strategies and guidelines that will facilitate the implementation adaptive reuse practices of cultural heritage as a circular economy strategy.

HUL approach

The Historic Urban Landscape approach derived from the UNESCO Recommendation on Historic Urban Landscapes (HUL Recommendation) that aims to manage urban heritage conservation and sustainable development in a holistic, integrated, and value-based fashion. The Recommendation defines a 6-step action plan (HUL steps) and 4 categories of tools to be adapted to local contexts for the implementation of the HUL approach. This approach is further elaborated as part of this Deliverable **to formulate an evaluation framework for the barrier assessment to embrace the multi-criteria, multi-level and multi-stakeholder approach in an integrated manner.**

PESTEL-CA evaluation framework

The evaluation framework conveyed in this Deliverable for the designation and categorisation of barriers and bottlenecks to adaptive reuse, followed by identification of solutions and formulation of

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guidelines and strategies is elaborated using the PESTEL-CA framework. The **PESTEL-CA framework** is drawn from the existing PESTEL framework initially used in the business management field. The **PESTEL-CA framework**, includes **political, economic, social, technical/technological, environmental, legal/regulatory, cultural and administrative** factors that affect policies and practices. It thus brings a more expanded holistic approach to evaluate and assess the barriers and bottlenecks to adaptive reuse of cultural heritage.

This PESTEL-CA framework is developed **as an analytical tool**, as a variant of PESTEL, used **to identify key drivers of factors impacting adaptive reuse of cultural heritage**. This framework is used to analyse the complex set of barriers and bottlenecks derived from the HUL workshops carried out during the 'building knowledge' phase of the CLIC project.

Literature review

A literature search is conducted within the Scopus and Web of Science databases, which include a total number of 151 journal papers published until November 2018 on the topic of adaptive reuse. The **literature study depicts that most of the barriers to adaptive reuse pertain to economic concerns**: high maintenance costs, high costs of energy retrofitting and commercial risks being mostly discussed issues of concern. In terms of regulatory and legal issues, compliance with building codes and limitations of existing regulatory systems at local and national levels were also deemed to be problematic. Location of existing buildings was also raised as a barrier in terms of market opportunities. In addition, social barriers such as inclusiveness, public awareness, social viability and human resources have also been mentioned by a number of scholars as some of the main challenges.

Methodology

This Deliverable employs a **mixed methodology of qualitative and quantitative research techniques** that convey the multi-vocal stakeholders' views through multiple-case study analysis, coupled with comprehensive literature review and data gathered from CLIC Cultural Heritage Adaptive Reuse Best Practices Survey. The qualitative and statistical data gathered from the HUL workshops are then analysed through **content analysis, cluster and network analysis for the coding, and depicted by complexity mapping,** individually for each pilot city and then comparatively to identify and group the barriers to adaptive reuse. The **CLIC Survey on Policy Enablers and Tools of Circular Adaptive Reuse** is then conducted to identify the underlying parameters, which have later guided the formulation of prospective strategies and policy-related guidelines based on the solutions suggested by the wide range of stakeholders and practitioners.

HUL workshops

The Historic Urban Landscape workshops (HUL workshops) led by the TU/e team is a data collection methodology applied in the four CLIC pilot cities **through participatory engagement of all the relevant stakeholders** concerned with the adaptive reuse of cultural heritage. Throughout the CLIC project, the NGO Pakhuis de Zwijger (NL), Salerno (IT), Rijeka (HR), and Västra Götaland region (SE) have hosted one workshop each; while the Pakhuis de Zwijger will host a second one in May 2020. The first three workshops were structured as "stakeholders' involvement processes in which to investigate barriers and bottlenecks, as well as best practices" concerning cultural heritage adaptive reuse, particularly through:

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- identifying barriers and challenges to cultural heritage adaptive reuse;
- identifying influencing factors of cultural heritage adaptive reuse;
- brainstorming solutions to overcome the identified barriers and mainstreaming adaptive reuse practices.

Barrier analysis through multiple case study assessment

The outcomes of the multiple case study assessment have led to the formulation the integrated list of barriers to adaptive reuse of cultural heritage, and further description of the most cited common barriers. The identified barriers have formed the basis for the formulation of strategic tools and solution to tackle them from a multilevel and multi-stakeholder perspective and finally contributed to the deduction of policy-related guidelines and strategies to adaptive reuse.

Some examples of the most salient barriers are:

- **Administrative:** Lack of collaboration, Lack of participation, Conflict of priorities
- **Cultural:** Conflict of interest, Lack of awareness
- **Economic:** Lack of funding, Conflict of priorities
- **Environmental:** Low energy efficiency, Limitations of waste management
- **Legal / regulatory**: Framework: incomplete, lacking, fragmented, complex, Accessibility
- **Political barriers:** Role of government, Lack of leadership
- **Social:** Inclusiveness, Lack of interest
- **Technological:** Lack of data, Lack of capacity

The multiple case study to assess adaptive reuse barriers points out that the **four main categories of barriers revolt around: administrative, economic, social and cultural barriers**.

The main outcomes of the multiple case study is as follows:

- Predominant administrative barriers, except for Västra Götaland
- Lack of funding and financial resources is a common economic barrier
- Focus on lack of awareness and knowledge is the social and cultural trends
- Different trends of tourism impact
- Limited reference to environmental threats and issues
- Technological issues mainly related to mapping and data management

Solutions analysis

In light of the barriers of implementing adaptive reuse of cultural heritage strategies and practices, the stakeholders of the four pilot cities have also suggested a high number of solutions (**538 solutions in total**). Most of these solutions have been associated with a certain set of barriers to be tackled at multiple levels of governance. Due to the high number of solutions suggested, they have been further coded through content analysis to obtain a **reduced list of 159 solutions.** They have then been grouped under a set of pre-defined tools of adaptation derived and elaborated from the HUL toolkit to facilitate the adaptive reuse processes.

The outcomes of the solution cluster analysis derived from the suggestions and reflections of the stakeholders have contributed to the development of the following items:

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- **A multi-level toolkit** elaborated upon the one initially drawn from the HUL Recommendation and the HUL workshops
- **Policy enablers** to facilitate the adoption of policy related tools and strategies of adaptive reuse

Building a multi-level toolkit

The findings derived from the analysis of barriers and solutions, conducted as part of this Deliverable, reveal that **the existing HUL toolkit is limited in context because its offer is limited to** four categories of tools and actions to facilitate the local adaptation process. They address the administrative, regulatory and financial aspects of the normative framework to a large extent, but **fail to provide effective solutions to overcome governance-related and environmental barriers, as well as socio-cultural problems**. As it has been emphasised in the HUL Recommendation that the toolkit provided is continually evolving (UNESCO, 2011), thus **a more elaborated toolkit with additional categories and tools are introduced** as part of this Deliverable in Section 7.3.

Building from these knowledge gaps and the solutions suggested by local stakeholders as part of the multiple-case study analysis**, an extended multi-level toolkit with examples of associated tools** to facilitate adaptive reuse policies and processes within the circular economy perspective is developed and presented as follows:

- **Knowledge and planning tools:** Mappings, impact assessments, mobility, visitor management
- **Regulatory systems:** Laws, legislations, regulations; policies and strategies; plans
- **Governance-**related tools: participatory decision-making tools; consensus and partnership; citizen engagement tools
- **Financial tools**
- **Environmental tools:** circular built environment, environmental and climatic adaptation, risk management
- **Educational tools:** education, raising awareness

Policy enablers of adaptive reuse

During the HUL workshops, the local stakeholders have provided insights into possible solutions and recommendations to overcome the challenges posed by the adaptive reuse barriers.

The findings of the stakeholder workshops can be compared with the findings of the CLIC Survey on Enablers and Tools of Adaptive Reuse conducted to **investigate the relative importance of certain strategies, tools and policies in relation to adaptive reuse of cultural heritage practices at different contexts**. The Survey aims to investigate how local decision makers and stakeholders evaluate certain policy-related enablers to tackle the barriers encountered in adaptive reuse of cultural heritage at local, regional, national and European levels. This investigation consisted of an online questionnaire circulated among the pilot city partners of the CLIC project and the stakeholders participating in the CLIC project. The present section reports upon the sample of 10 full responses.

The findings of the barriers, solutions and policy enabler assessments have largely contributed to the formulation of **policy-related guidelines that will help policy-makers to create an enabling environment for adaptive reuse of cultural heritage** in the transition towards circular economy. This Deliverable thus supports the identification and development of policies that will enable this

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transition, as policies play a significant role in directing the administrators and private sector towards transformation. In this context, the barriers, suggestions and policy enablers, at local, national and EU levels, can inform the transition from linear to circular models in terms of reuse practices of historic buildings, sites and landscapes. **Policy enablers at European, National and local level have been listed in order of their usefulness and feasibility indexes derived from the survey (enabler assessment) as follows:**

European Enablers:

At European Union policy level, stakeholders view the following strategies and tools as policy enablers of adaptive reuse:

- **EU Funding and Grants**
- **EU Directives**
- **UNESCO Historic Urban Landscape approach**
- **The EU Action Plan for the Circular Economy**
- **The Pact of Amsterdam (Urban Agenda for the EU)**
- **Support coming from Development Banks**

The assessment and ranking of these policy enablers at EU scale by local stakeholders allow the identification of essential policy-related strategies to be adopted to ease and support the transition towards circular adaptive reuse models. These key elements are summarised here:

- **Tools, models and mechanisms to facilitate the implementation of EU funding instruments and programmes at local contexts**
- **Regulatory measures to enforce the EU frameworks across EU Member States**
- **Enhancing coordination to ensure actions and strategies are interlinked**

National Enablers:

To design and implement successful circular and sustainable adaptive reuse strategies and policies at **National scale**, **a participatory and multi-level decision-making process is essential**. The following policy enablers assessed by the stakeholders in terms of usefulness and feasibility (and presented in sequence of highest mean to lowest) are fundamental to provide guidance towards circular policies and strategies:

- **Bottom-up approach to policy development**
- **National subsidies and market-based incentives**
- **National public funding and special budget**
- **Policies in favour of key national clusters**
- **Governmental circular economy and heritage priorities in developing smart specialization strategies**

It is important to keep in mind that **when working toward global solutions, progress at a national level could facilitate international and/or European agreements and frameworks**.

Local enablers:

At **Local level** following enablers are presented as useful and feasible:

- **Awareness raising campaign and education tools**
- **Multi-stakeholder platforms and citizen engagement**

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- **Scaling up public procurement for adaptive reuse**
- **Environmental impact assessments and risk mitigation plans**
- **Dedicated support for the development of sustainable tourism and mobility plans**
- **Enhancement of policy communication and enforcement**

It is clear that for the design and implementation of transparent, participatory and sustainable adaptive reuse strategies, **multi-level decision making process** is required. This process can enhance better communication, coordination and collective action across multiple levels of government, non-governmental agencies, other public and private entities, and local communities.

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1 Description of the Project

The overarching goal of CLIC trans-disciplinary research project is to identify evaluation tools to test, implement, validate and share innovative "circular" financing, business and governance models for systemic adaptive reuse of cultural heritage and landscape, demonstrating the economic, social, environmental convenience, in terms of long lasting economic, cultural and environmental wealth.

The characteristics of cultural heritage and landscape pose significant challenges for its governance. Cultural heritage is a “common good”, which enjoyment cannot be denied to citizens, although many buildings and landscape structures are privately owned. Furthermore, the large economic resources needed for recovery and maintenance of heritage goods are rarely available to the private owner, often charged of the additional cost of non-use due to limited degree of transformation allowed. The existing governance arrangements currently involve limited stakeholders concerning for the historic, aesthetic or religious sociocultural values, severely restricting the use of the heritage properties, and charge the central government of conservation costs. The approach of regulatory and planning tools throughout European countries has been to preserve cultural heritage by preventing transformation of buildings or areas having historic-cultural significance.

“The current monument-based, full protection, and government-financed approach that restricts the use of protected properties and relies almost entirely on public funds is incapable of tackling the vast urban heritage of most communities and of sustaining conservation efforts in the long term” (Rojas, 2016). To turn cultural heritage and landscape into a resource, instead of a cost for the community, the structures of authority, institutions and financial arrangements should be adjusted to ensure larger stakeholders’ involvement in decision-making, attract private investments and facilitate cooperation between community actors, public institutions, property owners, informal users and producers (Rojas, 2016). The risk is that without financing channels the decay of European heritage and landscape will increase, until its irreversible loss.

Flexible, transparent and inclusive tools to manage change are required to leverage the potential of cultural heritage for Europe, fostering adaptive reuse of cultural heritage / landscape. Tools for management of change should consider costs and benefits at the local level and for all stakeholders, including future generations, and should take into account the cultural, social, environmental and economic costs of disrepair through neglect, compared to the benefits obtained through diverse scenarios of transformation / integrated conservation.

Costs and values of cultural heritage adaptive reuse have to be compared in a multidimensional space: the relationship between costs and “complex values” influences the willingness to invest in the functional recovery of cultural heritage and landscape. Therefore, it is necessary to clarify what is intended for the value of cultural heritage. The higher the perceived value for potential actors, the higher the willingness to take the risk of investment. This “complex value” of cultural heritage depends on the intrinsic characteristics, but also from extrinsic (context) characters.

Investment costs are related to the materials, technologies and techniques to be used to preserve the cultural value of the heritage / landscape, and to maintenance / management / operating costs. The willingness to invest, the same value done, increases with the reduction of costs. Then, the social cost of abandonment – and eventual irreversible loss of heritage – must be included in the investment choice.

The investment gap in cultural heritage and landscape regeneration can be addressed through careful evaluation of costs, complex values and impacts of adaptive reuse, providing critical evidence

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of the wealth of jobs, social, cultural, environmental and economic returns on the investment in cultural heritage.

1.1 CLIC Specific objectives

The scopes of CLIC project will be achieved through a set of specific, measurable, achievable, realistic and time-constrained (SMART) specific objectives:

Objective 1 – To synthesize existing knowledge on best practices of cultural heritage adaptive reuse making it accessible to researchers, policy makers, entrepreneurs and civil society organizations, also with direct dialogue with their promoters;

Objective 2 – To provide a holistic ex-post evaluation of the economic, social, cultural and environmental impacts of cultural heritage adaptive reuse, stressing on the importance of appropriate conservation and maintenance approaches able to highlight the integrity and authenticity of heritage;

Objective 3 – To provide EU-wide participated policy guidelines to overcome existing cultural, social, economic, institutional, legal, regulatory and administrative barriers and bottlenecks for cultural heritage systemic adaptive reuse;

Objective 4 – To develop and test innovative governance models and a set of evidence-based, participative, usable, scalable and replicable decision support evaluation tools to improve policy and management options/choices on cultural heritage systemic adaptive reuse, in the perspective of the circular economy;

Objective 5 – To analyse hybrid financing and business models that promote circularity through shared value creation, and assess their feasibility, bankability and robustness for cultural heritage adaptive reuse;

Objective 6 – To validate the CLIC circular financing, business and governance practical tools in 4 European cities / territories representative of different geographic, historic, cultural and political contexts;

Objective 7 – To contribute to operationalise the management change of the cultural landscape also in implementing the UNESCO Recommendation on Historic Urban Landscape;

Objective 8 – To re-connect fragmented landscapes, through functions, infrastructures, visual relations at macro and micro scale;

Objective 9 – To design and implement a stakeholders-oriented Knowledge and Information Hub to make tools and information accessible, useful and usable and test them with policy-makers, entrepreneurs, investment funds and civil society organizations;

Objective 10 To contribute to the creation of new jobs and skills in the circular economy through cultural heritage adaptive reuse, boosting startups and sustainable hybrid businesses and empowering local communities and stakeholders through public-private-social cooperation models.

Objective 11 To contribute to the monitoring and implementation of SDGs (especially Target 11.4) and the New Urban Agenda, creating operational synergies with global initiatives of UN-Habitat, UNESCO/ICOMOS and the World Urban Campaign.

All partners have wide experience in developing and testing CLIC proposed tools, ensuring the effective and time-constrained achievement of all the above-mentioned specific goals. The integration of sectorial knowledge, tools and methods will be achieved through a trans-disciplinary

approach promoting partners and stakeholders' cooperation, co-creation of knowledge and co-delivery of outcomes.

The expected impacts of the project are the following:

- Validation of integrated approaches and strategies for cultural heritage adaptive re-use, comprising innovative finance with high leverage capacity, business models and institutional and governance arrangements that foster multi-stakeholder involvement, citizens' and communities' engagement and empowerment;

- New investments and market opportunities in adaptive re-use of cultural heritage, also stimulating the creation of start-ups;

- An enabling context for the development and wide deployment of new technologies, techniques and expertise enhancing industrial competitiveness and contributing to economic growth, new skills and jobs;

- Innovative adaptive re-use models that are culturally, socially and economically inclusive;

- Contribution to implementing the Sustainable Development Goals (SDGs) (Goals 1, 15, 11 particularly) and the United Nations New Urban Agenda.

2 Introduction

Cultural heritage is a driver for sustainable development in cities. As an economic and cultural asset, it boosts economic growth, enhances urban liveability, and contributes to environmental adaptability. In addition, the reuse of abandoned and underused cultural heritage buildings and sites is a practical substitute to demolition, bypassing the wasteful processes of demolition and new construction prolonging the cultural heritage lifespan.

According to the ICOMOS Burra Charter (2013), the goal of adaptive reuse of historic buildings is to sustain the value of a building to a place or community while ensuring its future usefulness. This Charter further indicates that adaptation is acceptable only where the adaptation has minimal impact on the cultural significance of the place (Article 21.1), while minimal changes to the significant fabric should take place after considering alternatives (Article 21.2). The UNESCO Recommendation on the Historic Urban Landscape (2011) also adopts a "**conservation through transformation**" approach, which aims to conserve the historic-cultural and social values of cultural heritage, engaging local communities and stakeholders in conservation, transformation and adaptation choices. It can be better implemented in the perspective of circular economy.

Adaptive reuse of cultural heritage can thus be instrumental to circularise the flows of energy, raw-materials, human and cultural capital, and hence plays a significant role in the transition towards circular economy. Complementary to its environmental benefit, it brings forth substantial economic, social and cultural advantages of reusing historic buildings, sites and landscapes attached meaning and values by a wide range of citizens and actors, which are fully embraced and investigated by the CLIC project.

The CLIC project systemically explores how the adaptive reuse of cultural heritage has the potential to stimulate growth, social regeneration, welfare, jobs, income, and liveability of urban / territorial settings: to implement the circular economy model and sustainable development. In order to achieve this overall aim, it is important to 'build knowledge', which formulates the basis for the innovative circular governance, financial and business models that are to be tested and validated in the CLIC pilot cities. For this purpose, this Deliverable is concerned with **the identification of barriers and bottlenecks to adaptive reuse, and to formulate the policy-related guidelines and strategies to tackle these barriers** at local, regional, national and global levels.

While the economic, environmental, social and cultural benefits of cultural heritage adaptive reuse is widely recognised and accepted in the last decade by scholars and experts (Kurul, 2007; Bullen and Love, 2010; Yung and Chan, 2011; Gravagnuolo et al., 2017 and 2019), the barriers and challenges of undertaking adaptive reuse projects in practice is yet to be covered. There are a wide variety of political, legal, regulatory, institutional and administrative barriers encountered at multilevel decision making processes when implementing adaptive reuse practices, in addition to a wide range of socio-cultural, economic, technical and geographical factors.

The decisions regarding whether to demolish or reuse an existing building, and the planning, design, execution and operation stages of the reuse policies and practices entail a complex set of considerations and issues to be addressed at multiple levels of decision making. Despite the worldwide acceptance of the socio-economic and environmental benefits of cultural heritage adaptive reuse, local administrators, developers and building owners may still regard the reuse of historic buildings and sites as an unviable option due to the complexity of barriers, and limitations of existing tools and strategies to cope with them.

This Deliverable thus **examines stakeholders' views and experiences** associated with adaptive reuse of cultural heritage within the context of sustainability and circular economy from a multidimensional and multifocal perspective. Barriers and solutions for cultural heritage adaptive reuse are identified using the steps and tools adopted by the Historic Urban Landscape Recommendation. This multidimensional barrier assessment is based on a multiscale case study analysis conducted in the CLIC pilot cities, Amsterdam, Salerno, Rijeka and Västra Götaland. As part of the multiple case study analysis, Historic Urban Landscape workshops were conducted, involving a wide range of stakeholders from the public, private and civic sectors, including representatives of local administrators, NGOs, developers, and researchers. The workshop entailed a multiscale assessment considering the site, urban, national, and international levels..

This research **thus enhances the understanding of challenges in adaptive reuse from multiple stakeholders' perspectives, reflecting their plurality of views**. The outcomes support the numbering-up of adaptive reuse practices by **providing solutions and tools to overcome the identified challenges**. By raising awareness and building consensus on barriers among relevant actors involved in adaptive reuse, this research also promotes the transition towards a proactive attitude in adaptive reuse practices worldwide.

2.1 Aim

This Deliverable D1.5 presents the outcomes of research carried out as part of "Task 1.2 – Identify cultural, social, economic, institutional, legal, regulatory and administrative barriers and bottlenecks for adaptive re-use of cultural heritage at city, regional, national and EU level" within Work Package 1.

It thus aims to identify the barriers (political, economic, social, cultural, technical, environmental, legal and administrative barriers) to support the adaptive reuse of cultural heritage in the context of multi-level governance at different contexts. **The critical examination of these barriers has contributed to the identification of the underlying parameters and suggested solutions from stakeholders, which have later guided the formulation of policy-related strategies and guidelines that will facilitate the implementation adaptive reuse practices of cultural heritage as a circular economy strategy**.

2.2 Document Structure

This Deliverable is formulated to include nine chapters, which includes the following structure:

- Executive summary
- Chapter 1: "Description of the project" – to briefly present the CLIC project;
- Chapter 2: "Introduction" – introduces the thematic framework, the knowledge gaps, the outline of the Deliverable and its original contribution to knowledge;
- Chapter 3: "Barriers to adaptive reuse: thematic framework and the state of art (literature review)" – conducts a comprehensive literature review to introduce the thematic framework of the Deliverable, the state of art, the barriers derived from the literature, and their limitations and knowledge gaps;
- Chapter 4: "Research methodology" – explains the data collection techniques and mixed methodology of qualitative and quantitative data analysis including content analysis, cluster and network analysis, complexity mapping, fuzzy Delphi methodology and solution building;

- Chapter 5: ”Barrier assessment” – presents and describes the barriers identified for each case specifically, and then in a comparative analysis for the 4 pilot cities, and further categorises and lists all the barriers to cultural heritage adaptive reuse;
- Chapter 6: “Strategies and tools to cope with barriers” – presents the solutions analysis derived from the HUL workshops and uses them to further develop a list of solutions in line with the HUL toolkit;
- Chapter 7: “Results – Policy-related guidelines and strategies” – introduces and explains the policy-related guidelines and strategies to overcome the barriers to adaptive reuse of cultural heritage
- Chapter 8 Conclusions: “Conclusion” – a summary and review of the Deliverable
- “References”
- “Acronyms”
- “Annexes”

3 Barriers to adaptive reuse: thematic framework and the state of art (literature review)

3.1 Thematic framework

There has been a rising interest towards adaptive reuse of historic buildings and sites as a driver for sustainable development in the past decade in parallel to the New Urban Agenda (European Parliament, 2017; ICOMOS, 2019). Yet there is still a lack of consensus on the factors influencing the adaptive reuse, and what effective strategies to adopt in order the meet these challenges, along with the changing needs and demands of a wide range of stakeholders. Considering the limited published research on cultural heritage adaptive reuse in the context of sustainability and circular economy, it is important to undertake a comprehensive review of the normative literature to determine which barriers have already been identified at different levels of decision making. It is also essential to point out the existing limitations and knowledge gaps, and discuss how to further elaborate and expand it with this Deliverable, which will then lead the process of developing appropriate policies and strategies to encourage adaptive reuse for circular economy.

In this context, this literature review section initially introduces the thematic framework on adaptive reuse within the context of four pillars of sustainability, and then elaborates the dimensions of evaluation to better understand and assess the barriers influencing the adaptive reuse. Then, a comprehensive literature review is employed to determine the factors influencing adaptive reuse of cultural heritage. This section will then function as a basis for further identification of multi-dimensional and multi-level barriers to implementing adaptive reuse from a multi-actor perspective within the context of Historic Urban Landscape approach in Section 5 of this Deliverable.

The HUL Recommendation

The Historic Urban Landscape is an approach developed as part of the UNESCO Recommendation on Historic Urban Landscapes (HUL Recommendation) that aims to manage urban heritage conservation and sustainable development in a holistic in a holistic, integrated, and value-based fashion. “Urban heritage, including its tangible and intangible components, constitutes a key resource in enhancing the liveability of urban areas, and fosters economic development and social cohesion in a changing global environment. As the future of humanity hinges on the effective planning and management of resources, conservation has become a strategy to achieve a balance between urban growth and quality of life on a sustainable basis” (UNESCO, 2011).

The Recommendation defines a 6-step action plan (HUL steps) and 4 categories of tools to be adapted to local contexts for the implementation of the HUL approach. The HUL steps involve identification of resources through mapping, identification of values and attributes by reaching consensus, identification of vulnerabilities through vulnerability assessments, planning and design for conservation and regeneration through integrating values, related attributes and their vulnerabilities in the wider development framework, prioritizing actions for conservation and development, and establishment of local partnerships and management framework for each of the actions (see Table 1). The 4 categories of tools included in the HUL recommendation as a supplementary toolkit involve: civic engagement tools, knowledge and planning tools, regulatory systems, and financial tools (see Table 2).

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Table 1 – 6-step action plan to implement the HUL approach

Phase	Activity
Identify resources	**Mapping** natural, cultural, and human **resources**
Identify values and attributes	**Reaching consensus** on what **values** and related **attributes** to protect
Identify vulnerabilities	**Assessing** the **vulnerability** of the identified values and related attributes to change and development
Plan and design for conservation and regeneration	**Integrating** values, related attributes, and their vulnerability in **urban development framework**
Prioritize	**Prioritizing** actions for conservation and development
Realize	**Establishing local partnerships** and management frameworks for each of the actions

Source: Adapted by Authors from Gravagnuolo and Fusco Girard (2017) and WHITRAP (2016)

Table 2 - 4 categories of tools to be adapted to local contexts

Civic engagement tools	Knowledge and Planning tools	Regulatory systems	Financial tools
consultations, workshops, surveys, etc.	mapping, fact sheets, assessments, etc.	laws, regulations, plans, policies, etc.	funding, public-private partnerships, grants, etc.

Source: Adapted by Authors from WHITRAP and City of Ballarat. (2016).

The HUL Recommendation provides an interdisciplinary and holistic approach to integrate cultural heritage conservation within the broader sustainability development framework, along with a supplementary toolkit. However, its implementation is still sporadic, not fully aligned with the circular economy framework, and unframed in the adaptive reuse and regeneration policies and practices at local level.

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Sustainability and adaptive reuse

Since the turn of the last century, the significant role of culture for sustainable development has been acknowledged by a high number of international and European policy documents, including: the UN Resolution on Culture and Sustainable Development (2015, A/RES/70/214), UN Agenda 2030 and Sustainable Development Goals (2-15), the New Urban Agenda (United Nations, 2017), UNESCO Global Report "Culture Urban Future'' (UNESCO, 2016) and the UNESCO HUL Recommendation (2011). Under the framework of the European Year of Cultural Heritage 2018, the Davos Declaration also highlighted the pivotal role of culture in shaping the living environment in a sustainable way (European Commission, 2018). These supranational policy documents have contributed significantly to the incorporation of culture and cultural heritage within the sustainable development framework in addition to environmental, economic and social sustainability dimensions, and formulation of culture-specific targets as part of the Sustainable Development Goals (SDG Target 11.4).

These international documents and statements have also contributed to the recognition of adaptive reuse of cultural heritage as an effective and environmental friendly tool of development for sustainability, embracing holistically the four pillars of sustainability (also referred as four dimensions and four domains of sustainability): environmental, economic, social and cultural sustainability. Adaptive reuse of existing built heritage extends the lifecycle of historic buildings and sites, avoids demolitions waste, enables reuse of the embedded energy, and provides significant socio-economic and cultural benefits to the society (Bullen and Love, 2010; Yung and Chan, 2012). There have been a number of studies by scholars and policy makers that underline the environmental benefits (Douglas, 2006; Gorse and Highfield, 2009), the economic gains (Browne, 2006; Bullen and Love, 2011a; Ost, 2012; Fusco Girard *et. al.*, 2013 and 2014), the social gains and cultural contributions (UNESCO, 2009; Langston, 2010; English Heritage, 2013; Conejos *et. al., 2016*) of cultural heritage adaptive reuse individually or partially in a coherent manner. The environmental benefits, including the energy savings, carbon emissions reduction, coupled with the social, cultural and economic advantages of recycling a valued heritage building, make adaptive reuse an essential component of sustainable development addressing all the four pillars of sustainability holistically.

While the four sustainability domains create the basic framework for the examination and classification of barriers to adaptive reuse from a multi-dimensional approach, they are not comprehensive enough to address the sophisticated indicators necessary to evaluate the performances of adaptive reuse practices at strategic and operational level (Gravagnuolo and Fusco Girard, 2017). The **evaluation framework for the barrier assessment thus needs to be further elaborated to embrace the multi-criteria, multi-level and multi-stakeholder approach embodied in the barrier assessment methodology holistically** in an integrated manner. This assessment framework is further explained in the following section 3.1.3.

PESTEL-CA evaluation framework

The evaluation tools for cultural heritage have developed substantially in recent years (Throsby, 2016, Gravagnuolo and Fusco Girard, 2016), introducing a multi-dimensional and multi-actor perspective to the analysis. While the sustainability domain introduces the four pillars for the evaluation of sustainability indicators, their framework is limited to address all the wide range of barriers encountered to implement adaptive reuse policies and practices. Hence, the evaluation framework conveyed in this Deliverable for the designation and categorisation of barriers and

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bottlenecks to adaptive reuse, followed by identification of solutions and formulation of guidelines and strategies is elaborated using the PESTEL-CA framework.

The PESTEL-CA framework is drawn from the PESTEL framework initially used in the business management field. The PESTEL framework is used for the analysis of political, economic, social, technological, environmental and legal factors in strategic management (Witcher and Chau, 2010). This framework is usually employed to understand how big business organisations operate, and to identify the opportunities and minimise threats to maximise their business activities. This framework utilised primarily for barrier assessment in business organisations is limited with respect to the variety of dimensions entailing challenges, therefore it is further elaborated for this Deliverable to embody all the relevant challenges and factors impacting cultural heritage adaptive reuse.

This newly adopted and elaborated framework, entitled **PESTEL-CA framework**, includes **political, economic, social, technical/technological, environmental, legal/regulatory, cultural and administrative factors** that affect policies and practices. It thus **brings a more expanded holistic approach to evaluate and assess the barriers and bottlenecks to adaptive reuse of cultural heritage.**

The following table (Table 3) introduces and defines the eight dimensions used in the framework for barrier and solution assessment, along with the sources of definitions:

Table 3 - Definition and explanation of PESTEL-CA framework

Factor / category	Keywords	Definition	Source
Political	Government, authority, policy, democracy, transparency	It is concerned with governments, governmental policies and regulations that institutions and organisations have to comply with. This would include political policy and stability as well as trade, fiscal and taxation policies too.	Oxford College of Marketing, 2016; Issa *et. al.*, 2011
Economic	Investment, funding, business models, partnerships, economic activities	It is concerned with cost-related matters. It involves permits for compatible land uses or economic activity, such as tourism revenues, reuse of buildings, management capabilities [...] , i.e., when the economic benefits or threats are mentioned (costs of conservation actions, funding, expenses or references to economic activities and functions, etc.)	Guzman et. al., 2017:41; Witcher and Chou, 2010
Social	Participation, citizen engagement, community involvement, social equity, social inclusion, social cohesion, population	Related to social equity, it is concerned with maintaining strong links with communities and contributing to society, professional creation, reception or participation activities but also actions related to government will, consultation processes, human resources, local population or civil society participation, improvement of life quality.	Guzman et. al., 2017:41

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Technical / technological	Techniques / methods, technology, innovation, tools, digital or mobile, access, data management	These factors consider the rate of technological innovation and development that could affect a market or industry. Factors could include changes in digital or mobile technology, automation, research and development. There is often a tendency to focus on developments only in digital technology, but consideration must also be given to new methods of data management.	Oxford College of Marketing, 2016
Environmental	Environment, climate change, natural hazards, contamination, energy efficiency, eco friendly	Concerned with protecting the natural environment (particular ecosystems in and around properties), environmental factors involve gradual changes due to geological, climatic or other environmental factors, threats and protection from natural hazards, pollution, efficiency and improvement of natural resources, environmental friendly interventions, etc.	Guzman et. al., 2017:41
Legal / legislative / regulatory	Legislation, legal acts, regulations, buildings codes, health and safety	It involves all legal-related topics and issues. Factors include zoning, land regulations, heritage legislation, building codes, local policies and strategies, health and safety regulations	Oxford College of Marketing, 2016
Cultural	Cultural heritage, tangible and intangible heritage, values, significance, sense of belonging, attractiveness	Set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs	UNESCO, 2001
Administrative	Administration, governance, decision making, stakeholder engagement, collaboration	It is concerned with holding the balance between economic and social goals and between individual and communal goals. The aim is to align as nearly as possible the interests of individuals, of cultural heritage, and of society.	UNESCO, 2013

Source: Adapted by Authors from the given sources

This PESTEL-CA framework is developed as an analytical tool, as a variant of PESTEL, used to identify key drivers of factors impacting adaptive reuse of cultural heritage. This framework is used to analyse the complex set of barriers and bottlenecks derived from the HUL workshops carried out during the 'building knowledge' phase of the CLIC project.

3.2 The state of art

Literature review on barriers to adaptive reuse

The shift to adaptive reuse of existing building stocks, rather than demolition and new constructions, has become an increasing trend within the built environment in the past two decades (Ball, 1999; Gallant and Blickle, 2005; Kurul, 2007; Wilkinson *et. al.*, 2009; Bullen and Love, 2011; Camocini, 2016; Gravagnuolo and Fusco Girard, 2017). There is also a growing perception of the inherent cultural and economic values of cultural heritage as assets contributing to economic growth, social wellbeing and sustainability, and adaptive reuse is widely recognised as a key driver to circular economy (Gravagnuolo, 2019).

A literature search is conducted using the following keywords within the Scopus and Web of Science databases, which include a total number of 151 journal papers published until November 2018 on the topic of adaptive reuse. The keywords searched encompass: “adaptive reuse” and “cultural heritage”, “adaptive reuse” and “heritage”, in addition to search items added to “adaptive reuse”, as such “landscape”, “heritage sites”, “urban spaces”, “cultural landscapes”, “historic centre”, “heritage cities”, “heritage areas”. Table 4 presents the number of papers identified using the selected keywords within these two databases:

Table 4 - Number of papers on the selected keywords

Keywords	No of papers (WoS)	No of papers (Scopus)	Common papers	Total number of papers
“adaptive reuse” and “cultural heritage”	25	40	-20	45
“adaptive reuse” and “heritage”	92	148	-107	88
“adaptive reuse” and “landscape”	27	30	-50	7
“adaptive reuse” and “heritage sites”	5	6	-5	6
“adaptive reuse” and “urban spaces”	2	3	-3	2
“adaptive reuse” and “cultural landscapes”	1	1	-1	1
“adaptive reuse” and “historic centre”	1			1
“adaptive reuse” and “heritage cities”		1	-1	
“adaptive reuse” and “heritage areas”	1			1
TOTAL				**151**

Source: Dr Julia Rey Perez, Lu Lu, Nadia Pintossi, Dr Gamze Dane

An overview of the abstract of this high number of published sources shows that the main focus has been on the adaptive reuse historic buildings and infrastructures, rather than landscapes and wider urban contexts. The present literature review then has been concentrated on the “barriers”, “challenges” and “problems” of adaptive reuse within this given number of publications. Among 151 papers on adaptive reuse, 33 of them have indicated some sort of barriers to adaptive reuse.

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In the realm of built environment practice, the factors influencing the decision making, design and implementation phases of adaptive reuse practices, and the barriers encountered in the processes are not fully grasped and addressed. This literature review shows that **there is a limited number of scholarly contributions that bring up the issues and challenges affecting the adaptation of reuse projects in existing built environments** (Douglas, 2006; Bullen and Love, 2011a and 2011b; Yang and Chan, 2012; Misirlisoy and Gunce, 2016; Conejos *et. al.*, 2016), and they usually have limited scope, scale and geographical distribution.

The following Table (Table 5) presents a list of identified barriers to cultural heritage adaptive reuse with their underpinning literature, categorized based on PESTEL-CA dimensions and the level of decision-making they entail.

Table 5 - List and categories of barriers derived from the literature

Dimension	Barrier	Level	Resource
Political	Transparency and accountability		World Bank, 2008; Yang and Chan, 2012
Legal/ Regulatory	Inertia of urban development criteria	Local level	Bromley et al., 2005; Bullen and Love, 2011
	Zoning	Local and urban levels	Douglas, 2006; Langston et al., 2007
	Compliance with local building codes	Local and regional levels	Cooper, 2001; Shipley et. al., 2006; Douglas, 2006; Conejos, 2016
	No sustainable tourism measures	Local and regional levels	Tweed & Sutherland, 2007
	Building regulations / planning restrictions	Local and national level	Bullen and Love, 2011; Leadbeter, 2013; Bruce et. Al., 2015
	Supportive governmental policies and strategies	Local, regional and national levels	Steinberg, 1996; Bullen and Love, 2011b, Zhang, 2011).
Administrative/ Institutional	Lack of participatory processes in decision making	Local level	Harnack and Stollmann, 2016
	Conflict of priorities of different actors	Local level	Harnack and Stollmann, 2016
	Community involvement	Local level	Pendlebury, Townshend, and Gilroy, 2004; Yung and Chan, 2012
Economic	High costs of energy retrofitting	Building scale	Shipley *et. al.,* 2006; Ellison *et. Al.*, 2007; Yung and Chan, 2012
	High maintenance costs	Building scale	Douglas, 2006; Kohler and Yang, 2007; Ellison et. al., 2007; Remoy and van der Voordt (2007); Bullen and Love, 2011

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	Commercial risk and uncertainty	Local level	Reyers and Mansfield, 2001; Shipley et al., 2006; Remoy and van der Voordt, 2007; Bullen and Love, 2011; Bruce et al, 2015
	Market opportunity due to location and site	Local level	Murtagh, 2006; Bullen and Love, 2011b
	Incentive schemes	Regional and national levels	Barber, 2003; Shipley et. al., 2006
Social	Human resources - lack of skilled tradesmen	Local level	Reyers and Mansfield, 2001; Cox, 2004; Remoy and Van der Voordt, 2007
	Inability to estimate social viability	Local level	Bullen and Love, 2011b
	Community value of existing buildings	Local level	Bullen and Love, 2011b
	Lack of social services and transportation	Urban and regional level	Yang and Chan, 2012
	Public awareness of adaptive reuse	Local, regional and national level	Bullen and Love, 2011b
	Meeting the needs of all relevant stakeholders		Lufkin et. al., 2005
	Social inclusiveness		Tweed and Sutherland, 2007; Yang and Chan, 2012
Cultural	Culture perceptions	Building level	Kurul, 2007
	Balancing cultural significance and economic viability	Building level	Murtagh, 2006; Yang and Chan, 2012
	Intangible dimensions - difficulty of assessing intangible heritage values	Local level	DEH, 2004; Yang and Chan, 2012
	Sense of place and identity	Local level	Rodwell, 2003; Stubss, 2004, Tweed and Sutherland, 2007
	Significance assessment and changing perceptions of heritage	Local and urban level	Ball, 1999; Gregory, 2004; Ellison and Sayce, 2007; Leadbeter, 2013
Environmental	Contamination and high remediation costs	Local level	Douglas, 2006; Wilkinson et al., 2009; Leadbeter, 2013; Bruce et al, 2015
	High energy performance requirements	Local and national level	Shipley *et. al.,* 2006; Douglas, 2006; Ellison *et. al.*, 2007
Technical/ Technological	Longevity of building materials (durability of external fabric and finishes etc.)	Building scale	Ball, 1999; Lutzkendorf and Lorenz, 2005; Bradley and Kohler, 2007; Bullen and Love, 2011
	Flexibility of buildings to accommodate new use	Building scale	Boehland, 2003; Cox, 2004 Ellison et. al., 2007; Bullen and Love, 2011; Bruce et. Al, 2015
	Complexity and technical difficulties	Building scale	Ball and Ball, 1999; Shipley et al, 2006; Kronenburg, 2007; Bruce et al, 2015

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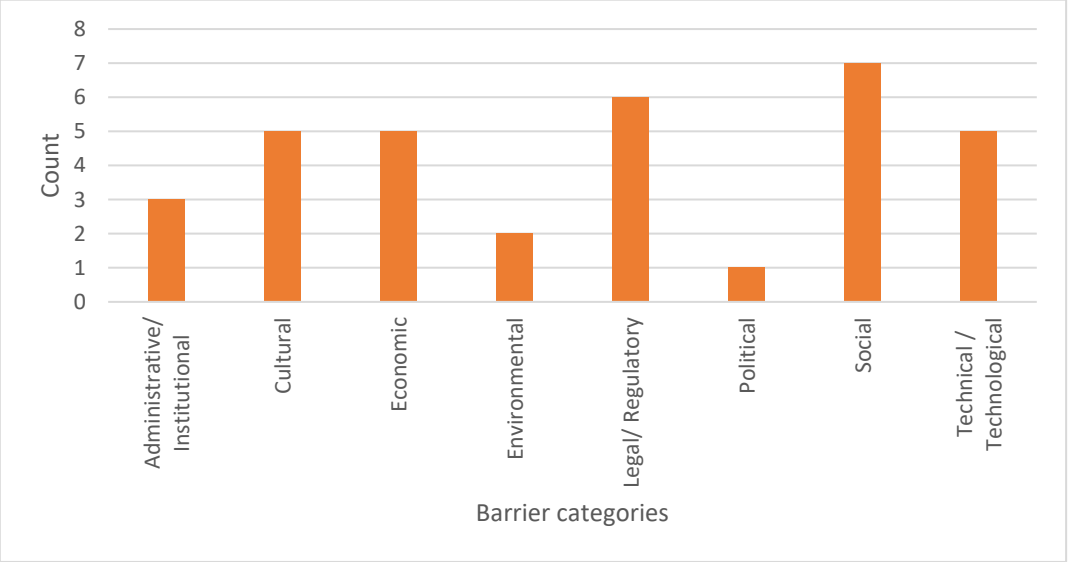
	Limitation of knowledge and data	Building scale	Cox, 2004; Remoy and Van der Voordt, 2007
	Health and safety requirements	Local level	Conejos, 2016

Source: Adapted by Authors from the given sources

Based on Table 5, the outcomes of the systematic literature review on the barriers to adaptive reuse can be summarized as below:

- **Primarily social barriers, followed by cultural, economic and technological barriers, respectively:**
  According to Figure 1, the literature study depicts that most of the barriers to adaptive reuse pertain to economic concerns: high maintenance costs, high costs of energy retrofitting and commercial risks being mostly discussed issues of concern. In terms of regulatory and legal issues, compliance with building codes and limitations of existing regulatory systems at local and national levels were also deemed to be problematic. Location of existing buildings was also raised as a barrier in terms of market opportunities. In addition, social barriers such as inclusiveness, public awareness, social viability and human resources have also been mentioned by a number of scholars as some of the main challenges.

Figure 1 - Distribution of barriers based on PESTEL-CA dimensions



Source: Authors

- **Focus on building scale and local level at decision making:**

According to Figure 2, almost half of the barriers are associated with decisions taken at local level (48%), followed by barriers concerned with the building scale (20%). The multilevel distribution of barriers to adaptive reuse is followed by regional, national and urban levels, respectively. Specifically, the environmental, technical/technological and cultural barriers are tended to be concerned with building and local scales, whereas political, regulatory and administrative barriers address issues of wider scale.

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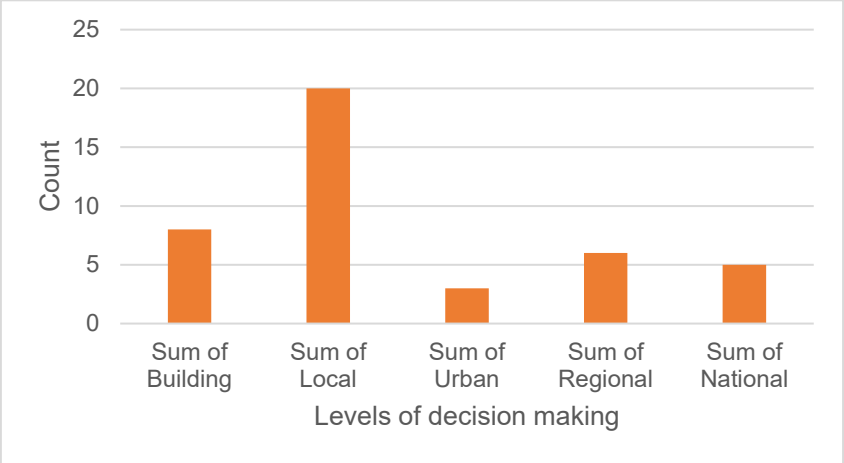
Figure 2 - Distribution of barriers based on levels of decision making



Source: Authors

The barriers concerned with the lifecycle of existing building stocks, such as the longevity of existing building materials, meeting the health and safety requirements and high-energy performances, and the relevant high maintenance and energy retrofitting costs are related to the operational performance of the reused buildings, and are challenges encountered at individual building or site levels by owners, developers, and/or users. It is argued that the operational performances of historic buildings drop with age, resulting in problems of difficulty in meeting sustainability requirements and high maintenance and optimization costs to increase the lifecycle expectancy (Bullen and Love, 2011).

The technical/ technological barriers tend to concentrate around the technical difficulties that working on heritage buildings will generate. Many of the materials and components used in heritage buildings are no longer readily available and may have to be manufactured to special order. Even if the materials are obtained there is no guarantee that suitably qualified craftsmen will be available locally or even nationally.

- **Shift of focus from economic and environmental barriers towards more inclusive dimensions:**

It is also derived from Table 5 that the earlier scholarly contributions were mostly concentrated on the economic, environmental and technical barriers to be tackled at building and local scales. Parallel to the incorporation of sustainability framework into the adaptive reuse discourse, however, there has been a shift towards a more integrated approach that also embodies cultural and social dimensions in terms of issues to be addressed.

Limitations and knowledge gaps

The review of the existing literature on factors influencing adaptive reuse policies and practices also reveals certain limitations and knowledge gaps in the normative literature that can be summarized as: limitations of scale and scope, limited geographical distribution, and lack of a holistic sustainability and circular economy framework, which are explained in more details below:

- **Limitations of scale and research scope:**

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There is clearly lack of a wider and multilevel approach to barriers of implementing adaptive reuse. The barriers that are already defined in the normative literature usually have a limited scope focusing on the individual building and site scale, as shown in Figure 2. This is associated with the earlier focus on costs of operation for reused buildings and their environmental performances. Even though the scope of the recent publications have expanded to a certain extend to include regulatory, political and administrative concerns to be tackled at wider urban, regional and national scales, the approach is still sporadic and fragmented.

- **Limited geographical distribution:**

While there are certain national level problems discussed specifically on regulatory and legal-basis in several academic publications, they are mostly case-specific and represent non-European contexts. For instance, there are a number of papers that examine the regulatory and legislative framework in Australia (Bullen and Love, 2011a; Leidbeter, 2013), in addition to papers that investigate the barriers associated with the construction sector in the United Kingdom (Kurul, 2007), and in Canada (Shipley et. al., 2006; Tam and Hao, 2019). In addition, some papers focus only on specific building typologies in certain countries, such as adaptive reuse of religious buildings (Velthuis and Spennemann, 2007) and office buildings in the Netherlands (Remoy and van der Voordt, 2014). Consequently, there is lack of an integrated vision that investigates and identifies barriers to adaptive reuse at European scale.

- **Lack of a holistic framework:**

The limited scale, scope and geographical representation of the scholarly contribution to the field of adaptive reuse fails to provide a holistic consideration on the economical, social, environmental and the cultural concerns which constitutes the four fundamental pillars in a solid sustainability framework.

The barriers already identified in the existing knowledge mostly focus on issues that are to be addressed during the formative stages of the design process so that necessary actions can be taken towards more sustainability efforts. However, its implementation is still sporadic, not fully aligned with the circular economy framework, and unframed in the adaptive reuse and regeneration policies and practices at local level.

In this sense, it is clear that there is a **need for a more holistic framework that will integrate sustainability, circular economy and HUL frameworks**. Addressing only the economic and environmental concerns is not sufficient. All the other domains of sustainability elaborated with the PESTEL-CA dimensions also significantly contribute to the extent to which heritage buildings, sites and landscapes adaptively reused can be sustainable and contribute to circular economy at local, national and European levels.

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4 Research Methodology

4.1 Introduction

This Deliverable employs a mixed methodology of qualitative and quantitative research techniques that convey the multi-vocal stakeholders' views through multiple-case study analysis, coupled with comprehensive literature review and data gathered from CLIC Cultural Heritage Adaptive Reuse Best Practices Survey. The qualitative and statistical data gathered from the HUL workshops are then analysed through content analysis, cluster and network analysis for the coding, and depicted by complexity mapping, individually for each pilot city and then comparatively to identify and group the barriers to adaptive reuse. The questionnaire and the focused interviews are then conducted to identify the underlying parameters, which have later guided the formulation of prospective strategies and policy-related guidelines based on the solutions suggested by the wide range of stakeholders and practitioners.

4.2 Data Collection

Literature review

The Deliverable starts with a systematic literature review on the factors, challenges and barriers to adaptive reuse defined and articulated by a number of scholars and practitioners. The barriers collected from the existing normative literature are categorized based on the PESTEL-CA dimensions and evaluated based on the levels they apply. This assessment is used to underline the limitations of the existing literature on the topic, and the knowledge gaps that are filled by this Deliverable.

CLIC Best Practices Survey

The CLIC Survey on best practices of cultural heritage adaptive reuse presents detailed data on 126 European cultural heritage adaptive reuse practices, including an overview of the barriers and bottlenecks encountered in the process. The respondents have been provided with six categories for barriers, including economic-financial, regulatory (e.g. heritage regulations / authorities), physical (e.g. accessibility, morphology, structure), administrative, cultural, and other. They have been allowed to choose more than one categories. Particularly, for the 'other' option, they have been given free space to write down the other barrier/s.

Based on the Survey results, almost all projects (112, representing the 88%) reported to have encountered barriers in the process of adaptive reuse. As shown in Figure 3, the economic-financial barriers are the most reported with 52 projects. The regulatory barriers closely follow with 49 cases. Therefore, economic-financial and regulatory barriers represented the most encountered ones. The remaining categories have 38 cases for the physical barriers, 28 for the administrative ones, 25 for "other" kind of barriers, 14 for "none" and lastly 10 for the cultural barriers.

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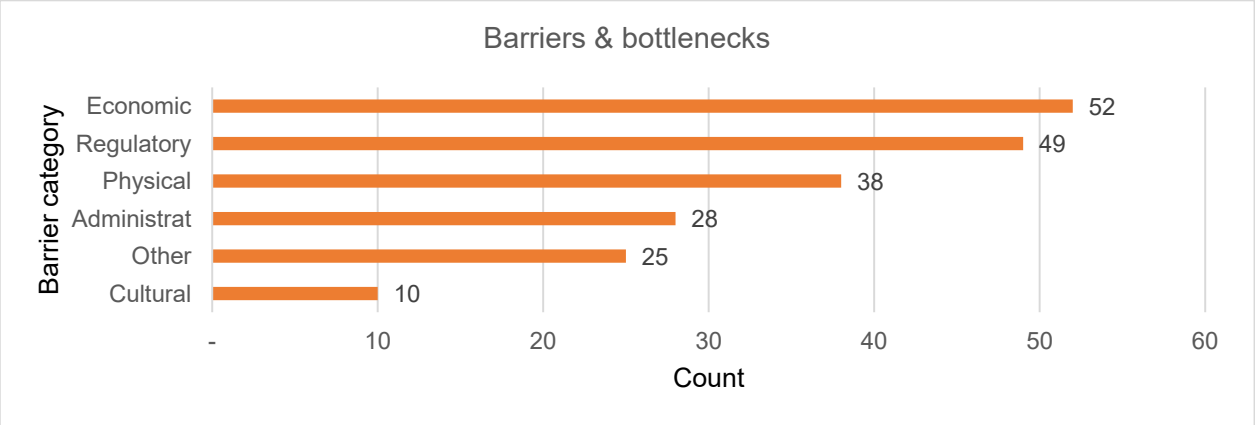
Figure 3 - Statistical analysis of barriers selected within the CLIC Best Practices Survey



Source: From Authors' contribution to *Deliverable 1.3 – Survey on best practices of cultural heritage adaptive reuse*

As for the other option, the following barriers have been listed by the participants:

- natural disasters
- demographic situation and social issues
- political issues and conflicts
- perception of space
- flora and fauna

HUL Workshops

The Historic Urban Landscape workshops (HUL workshops) led by the TU/e team is a data collection methodology applied in the CLIC pilot cities through participatory engagement of all the relevant stakeholders concerned with the adaptive reuse of cultural heritage. Throughout the CLIC project, the NGO Pakhuis de Zwijger (NL), Salerno (IT), Rijeka (HR), and Västra Götaland region (SE) have hosted one workshop each; while the Pakhuis de Zwijger will host a second one in May 2020. The first three workshops were structured as "stakeholders' involvement processes in which to investigate barriers and bottlenecks, as well as best practices" (Grant Agreement, 2017: ANNEX 1 (part A) p. 12) concerning cultural heritage adaptive reuse, particularly through:

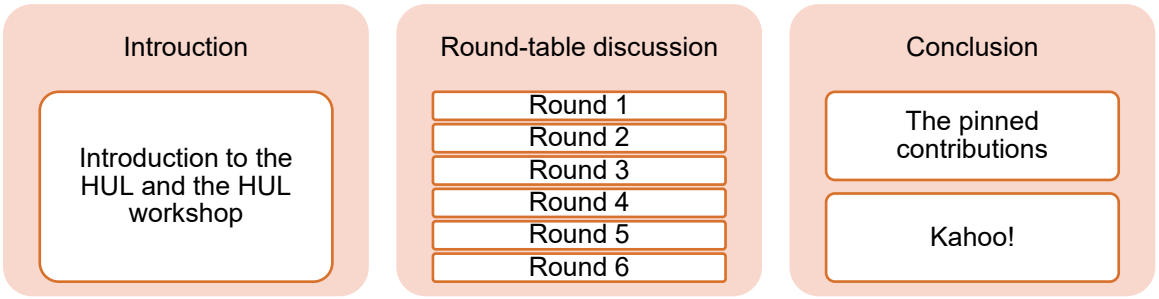
- identifying barriers and challenges to cultural heritage adaptive reuse;
- identifying influencing factors of cultural heritage adaptive reuse;
- brainstorming solutions to overcome the identified barriers and mainstreaming adaptive reuse practices.

These workshops aimed to identify barriers and bottlenecks at city, regional, national, and EU level (Grant Agreement, 2017).

The workshop in Västra Götaland and the second workshop in Amsterdam, on the other hand, aim to provide a "project-long assessment and analysis of barriers to implementation" (Grant Agreement, 2017: ANNEX 1 (part A) p. 12). The workshop held in Västra Götaland is also concerned with the testing and validation of the innovative tools developed as part of the CLIC project, and the workshop in Amsterdam will focus on the transfer of knowledge.

In this context, the first three HUL workshops were held in Amsterdam, Salerno and Rijeka in May 30-31st, 2018, Nov. 26-27th, 2018, and March 28th, 2019, respectively. For these three workshops aiming to investigate the barriers and bottlenecks, the following workshop structure was employed in all the three cities, so that it will also allow comparative analysis between them: the introduction, the round-table discussion, and the conclusion (Figure 4).

Figure 4 - Introduction to the HUL, the HUL workshop, and the case context



Source: Authors

The HUL workshops demanded the active participation of both local and CLIC stakeholders in round-table discussions. These discussions were structured following the six critical steps of the HUL approach defined in the HUL Recommendation (UNESCO, 2011). Hence during the workshops, there were six tables where each one investigated cultural heritage adaptive reuse focusing on a specific HUL critical step. Each table-step had a facilitator acquainted with the Historic Urban Landscape Approach. Each round, the participants selected a different table to sit in, in order to discuss each step with a variety of other stakeholders. To ensure multidisciplinary, cross-sector, and background mix; the participants were asked to choose the table avoiding participants from the same institution or organization and group composed only by partners of the CLIC consortium.

The discussion part of the HUL workshop was structured in six sessions, each named “round”. During a round, each group sitting at a table discussed the topic from the perspective of the HUL step the table was themed after. Once a round was concluded, the participants changed table allowing every participant to discuss barriers and bottlenecks to cultural heritage adaptive reuse and related solutions from the perspective of all six HUL critical steps. During the discussions, the participants were allowed refer to different scales of governance. In order to distinguish among these scales of analysis, the participants indicated to which scale the contribution referred to: For instance, in Rijeka, “#RiHub” (the case study chosen by Rijeka); “#Rijeka” for the city of Rijeka; and “#Elsewhere” for contributions referring to elsewhere/other scale of analysis (e.g. national level).

The HUL workshop held in Västra Götaland involved five parts: the introduction, the barrier evaluation, the tool assessment, the toolkit creation, and the wrap-up (Figure 5 and Figure 6). Both local and CLIC stakeholders actively took part in evaluating the barriers, in assessing the tools, in creating the toolkits, and in sharing the results of the process.

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Figure 5 - Structure overview of the HUL workshop IV Västra Götaland

1. Introduction

2. Barrier evaluation

3. Assessment of tools and circular models
4. Toolkit creation

5. Sharing and wrap-up

Source: Authors

Figure 6 - Details about the barrier evaluation, the tool assessment, and the toolkit creation.

Barrier evaluation	Tool assessment	Toolkit creation
Questionnaire. - Does this barrier still apply? - What is the best level to tackle this barrier?	Card sorting. - Is the tool useful? - Is the tool feasible to use?	Card sorting. - Which tools to include in the toolkit? - Which barriers are tackled with the selected tools?

Source: Authors

The HUL workshop started with an introductive presentation explaining concepts relevant to the workshop, namely the HUL approach and the HUL categories of tools, and introducing the tools to be assessed. Prior to the HUL workshop, the participants were informed about the context of Västra Götaland and the local cases represented at the HUL workshop.

Starting from the barriers identified during the first meeting of the Heritage Innovation Partnership (HIP), the authors clustered them in a list of 15 barriers and provided related descriptions. Based on the four pillars of sustainable development, these barriers were further classified as social, economic, environmental, and cultural barriers. The participants individually evaluated these barriers via a digital questionnaire hosted on the platform Lime Survey. The aim of such evaluation was to gather insights on the participants' opinion with regard to these barriers. Particularly, per each barrier, the stakeholders answered the following questions:

- Does this barrier still apply?
- What is (are) the best level(s) to tackle this barrier?

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Then, the participants were provided with a selection of 11 innovative circular tools and models that are identified and developed within the CLIC project. These tools and models were classified according to the four tool categories described in the HUL Recommendation, namely: the civic engagement tools, knowledge and planning tools, regulatory systems, and financial tools. For the tool assessment, the participants created four teams ensuring diversity of composition with respect of the background of the members. After discussing among the members, each team decided where to stick the adhesive labels with the name of the tools in the "Useful-Feasible" diagram:

- "Useful" indicates a tool or a model that solves a problem or fulfils a need
- "Feasible" indicates that the use of the tool or model is doable and the resources are available or acquirable.

Afterwards, the participants created their own toolkit to support their processes of adaptive reuse of cultural heritage within the HIP. They selected the tools among the ones proposed for the tool assessment and they were invited to add further tools. Afterwards, they indicated which barriers would be tackled using the tools included in their toolkit. The HUL workshop was then concluded with the representatives of the local cases sharing their toolkit.

For each of the HUL workshops, participation of more than 10 organisations to the workshops and co-reporting of results were ensured, meeting the Objective 7 of the Grant Agreement. In the workshop held in Amsterdam in May 2018, there were 57 participants that joined the two-days event, among which 25 of them were not actively involved in the CLIC project. The participants of the HUL workshop included representatives of the following stakeholders: the Municipality of Amsterdam, the Cultural Heritage Agency of the Netherlands, practitioners and SME representatives (e.g. architects, participatory practices professionals, consultancy professionals, developers, Students, researchers and academics (e.g. University of Amsterdam, Reinwardt Academy, Delft University of technology, Bauhaus-University Weimar), and citizens of Amsterdam.

In Salerno, there were a total number of 75 participants joining the two-day events as part of the HUL workshop: 43 participants were not actively involved in the CLIC project, whereas 32 were CLIC members. The participants involved representatives of more than twenty organisations, including: national institutions and various governmental authorities (e.g. the Municipality of Salerno, the provincial government of Salerno, the Cultural Heritage Agency of Italy, National Authority for Public Property), professional orders (e.g. Professional Accounting Association), foundations (e.g. Fondazione EBRIS, Fondazione Cassa di Risparmio Salernitana), cultural associations (e.g. Adorea, ARCAN, ARCI, Italia Nostra etc.), and SMEs (Palazzo Innovazione, Tripmetoo etc.).

In Rijeka, there were 35 participants that actively took part in the round-table discussions of the HUL workshops: 10 participants were not actively involved in the CLIC projects, whereas 25 had been CLIC members, including the six facilitators. Among the stakeholders participating in the HUL workshop, there were representatives of more than 13 organizations: National institutions and various governmental authorities (the Municipality of Rijeka, the Port Authority of Rijeka, the Natural History Museum, Rijeka2020 Agency, Municipality of Čavle, Art-kino etc.), SMEs (Mydonia consulting, KD Čistoća etc.), and NGOs (CTK Rijeka, Sqladria etc.)

Finally, in Västra Götaland, there were 28 participants attending the HUL workshop. Among them, 8 participants were not actively involved in the CLIC project, whereas 20 had been CLIC members. Among the stakeholders participating in the HUL workshop, there were representatives of 8 organizations: Institutions and various governmental authorities (e.g. the Municpiality of Bengtsfors, the Municipality of Svenljunga representing Strömsfors Brük, Västrarvet, Forsviks Brük), NGOs (e.g. Not Quite (Fengersfors), Strömsfors Brük), and SMEs (Uddebo Vaveriet, Plusvalue).

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In accordance with the structure of the first three HUL workshops derived from the six steps of the HUL recommendation, the preliminary results discussed at each roundtable are classified and categorised based on the HUL step, level of involvement, and whether they are identified as a barrier or solution. Then they are coded and further categorised based on the steps described in Section 4.3. Data Analysis. Following this assessment, the solutions identified by participants are further analysed and incorporated into the HUL toolkit categorised under four main tools.

4.3 Data Analysis

Every case study requires a general analytical strategy to identify what data to analyse and why, as well as how to analyse the data (Cresswell, 2007). In this multiple-case study, the general analytical strategy is based on explanation building that aims to stipulate a presumed set of causal links between the complex set of barriers identified in each case city in order to build an explanation for the wider European context, and to develop a set of policy-related guidelines that reflect some theoretically significant propositions.

For the assessment of the findings derived from the multiple-case study analysis, a unique research methodology is designed and employed for this Deliverable. Exploring a range of methodological approaches, **a content analysis is initially operated code the big set of qualitative data, followed by cluster analysis to categorize the barriers based on the PESTEL-CA framework, and network analysis to explore the connectivity and interlinkage between the categories**. In cases where traditional barrier analysis techniques fail to encompass the complex nature of adaptive reuse practices, this methodology portray a more holistic image of all the relevant processes, issues and solutions. The data collection and analysis processes have operated iteratively during the whole research process, as the outcomes of the HUL workshops have also been individually presented in the Deliverable 1.1 Report on HUL Workshops.

Multiple-case study analysis

The multiple-case study is employed as the main research methodology of this Deliverable. Dealing with “the complexity and particular nature of the case”, case study research examines current events within real-life contexts, draws on multiple sources of evidence and aims to provide meaning in this context (Bryman, 2008: 52). This approach is concerned with why some decisions are taken, how they are implemented and what the consequences and solutions are addressing the barriers to carry out adaptive reuse practices and policies. It provides a framework feasible for complex phenomena where the inquiry copes with many variables of interest, multiple sources of data, and complicated causal links between the data collected and its interpretations (Yin, 2003). The variety of urban governance systems, decision-making mechanisms and diverse roles of a broad range of actors correspond to the integrated and contemporary real-life approach of this method, and make this all-encompassing method the most suitable for this research. The assessment of the CLIC pilot cities have led to identification of barriers and bottlenecks that can be generalised to similar European sites.

Content analysis

Content analysis has been used as the primary analysis technique on the collected data. This technique has entailed the extraction and categorization of information collected from the case cities. Using NVivo has enabled the development of an organic approach to coding as it enabled categories

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derived from the PESTEL-CA and thematic approach described in Section 3, and their usage in the text to be coded and used to keep track of emerging and developing ideas. Specifically, data have been downloaded as text into a Microsoft Excel spreadsheet and coded by one researcher; then the pattern of coding has been corroborated and additional coding considerations suggested by a second researcher (peer debriefing). These codings are further integrated, modified and migrated as the analysis progressed, which facilitated the deduction of the list of barriers to the implementation of adaptive reuse. Additionally, using axial coding, we analyzed and developed conceptualization of relationships or interdependencies among the categories of barriers.

Once all the responses have been coded, the frequencies of each subtheme has been calculated to illustrate the range of stakeholders' perceptions. The number of references made by the participating stakeholders for each barrier has then been reported with "n" to illustrate how frequently the barrier or need was encountered, experienced or identified. It is important to note that it was not intend to carry out a statistically significant assessment of identified barriers and needs at the first place; rather, the exploratory nature of the study is intended to provide some important insights about the types of barriers, their interdependencies, and needs for overcoming them as identified by experts and interpreted by researchers. Additionally, it is important to note that the frequency with which barriers have been mentioned reflect the saliency of each barrier and need to the experts who participated in this study and, as such, do not reflect relative importance.

Cluster analysis, network analysis and complexity mapping

Following the comprehensive content and cluster analysis of the empirical data derived from the HUL workshops, the complex set of barriers and bottlenecks identified for each case are mapped out using the complexity mapping technique. This methodology is drawn from the field of managerial and organisational cognition. This approach relies on the individuality of reflections derived from the personal set of beliefs, thoughts and knowledge of each decision maker (Edkins *et. al.*, 2007). In cases where traditional barrier analysis techniques fail to encompass the complex nature of adaptive reuse practices, this methodology portray a more holistic image of all the relevant processes, issues and solutions. They provide a better understanding of all the parameters constituting the complex governance, administration, financing and sustainability protocols, whereas the traditional methods pursue arbitrary simplification and standardised means of explanation building.

In this context, cognitive mapping techniques involving content analysis and causal mapping are employed to graphically exhibit the post-coded barriers and bottlenecks, and their distribution and interrelations based on the PESTEL-CA categorization (pre-coding). The post-codings derived from the content analysis of the responses from the HUL workshops are depicted in complexity maps developed for each city based on Eden's causal mapping approach (1989). It is a decision-support tool that demonstrates individual experiences and captures the complexity of decision making. It is supported with an advanced software package for open source network analysis, Gephi, which allows the formation and analysis of cognitive maps. Codes and concepts derived from the aforementioned sources of data are typed into text blocks in this software, and maps are built out of these categories that are linked to each other by arrows in a hierarchical form. The barriers identified by stakeholders for each pilot city are exhibited, and are further linked to core categories and each other.

From these complexity maps, looped factors for each case city were determined. Through cluster analysis, the looped codes were segregated into various clusters depending on the links between them. Then these clusters were interpreted and summarised into short titles. An overall barriers to

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adaptive reuse complexity map was then developed, to reconnect cluster titles to each other based on the links originally connecting the barriers and core categories.

CLIC Enablers of Adaptive Reuse Survey and the Fuzzy Delphi Method

As part of data analysis for the identification of most effective solutions and development of a toolkit to cope with the barriers to adaptive reuse derived from the multiple case study analysis, a Likert-scale Survey has been designed that is entitled **"CLIC Enablers and Tools of Adaptive Reuse Survey"**. This Survey has been designed by Eindhoven University of Technology (TU/e), and has been administered with the cooperation of the CLIC partners. The survey has been circulated among the local stakeholders that have been involved in the HIP process and HUL workshops, and their responses have been collected to contribute to the development of policy-related strategies and guidelines in Section 6 of this Deliverable.

For this purpose, the CLIC Enablers and Tools of Adaptive Reuse Survey consists of two parts:

1. Enablers to Facilitate the Adaptive Reuse of Cultural Heritage
2. Circular Tools of Adaptive Reuse

The first part of the Survey has focused on the **enablers to facilitate the adaptive reuse policies and strategies at multiple levels of governance**. Drawn from the solutions suggested by the stakeholders to cope with the barriers and the elaborated toolkit, a number of enablers to be adopted at local, national and European levels has been identified and presented to the survey respondents to measure their usefulness and feasibility specifically for their relevant case cities.

The aim of the second part of the Survey has been **to test the usefulness and feasibility of the toolkit developed from solutions suggested by the local stakeholders and CLIC partners** during the HUL workshops, the innovative circular tools of adaptive reuse designed by CLIC academic partners, in addition to the HUL tools derived from the normative literature. It has thus been designed to collect the reflections, observations and self-assessments of local and regional stakeholders participating as decision makers in the CLIC case cities.

For the analysis of the responses collected from the survey, the **Fuzzy Delphi Method** is employed to consolidate consensus agreement within a panel of local stakeholders from different geographical and contextual settings. The Fuzzy Delphi Method is an analytical tool derived from the classical Delphi Method, a collective decision-making technique. This methodology incorporates ideas from the Fuzzy Theory relying upon the assignment of fuzzy evaluation values to all stakeholders in order to determine the agreement degree between them. The application of this methodology to the results of the Likert-scale survey has **enabled the assessment of usefulness and feasibility of adopting the policy enablers at local contexts**.

The questions posed to the stakeholders in two parts of the Survey is presented in Section 14. Annex 4, and the Informed Consent Form distributed and collected from the respondents is attached to the Section 15. Annex 5. The participant profile and the results of the statistical analysis derived from the survey responses are presented in details in Section 6.3.

5 Barrier Assessment

5.1 Introduction

This section is dedicated to barrier assessments conducted in each of the four pilot cities through HUL workshops. The outcomes of the multiple case study assessment have led to the formulation the integrated list of barriers to adaptive reuse of cultural heritage, and further description of the most cited common barriers. The identified barriers have formed the basis for the formulation of strategic tools and solution to tackle them from a multilevel and multi-stakeholder perspective (see Section 6), and finally contributed to the deduction of policy-related guidelines and strategies to adaptive reuse (see Section 7).

As explained in detail in section 4.2.3, the HUL workshops have been the primary data collection methodology employed to identify the multi-layered barriers specified by local stakeholders and partners for each case city. Thus, an emic approach to elicit and document the salient opinions of local stakeholders is selected over an etic approach that imposes the a priori ideas of experts and scholars. Through content analysis, the data derived from the workshops has resulted in **a total number of 708 contributions reporting barriers (Amsterdam: 164, Salerno: 373, Rijeka: 124, and Västra Götaland: 47)**, which are then further coded, clustered and categorized based on the PESTEL-CA framework through the conduct of cluster and network analysis. This has yielded to a list of **98 political, economic, social, technical/technological, environmental, legal/regulatory, cultural and administrative barriers** to adaptive reuse, and the most commonly cited 12 of these barriers are further examined and explained in Section 5.4.2.

In this context, the first part of this section concentrates on case-specific barrier assessment where each case study is investigated individually, followed by a comparative analysis of the four case studies based on the weight of each category and the reasons behind it. These assessments have then contributed to the collection of the common list of barriers to adaptive reuse, followed by the description and examination of the most cited problems.

5.2 Case specific barriers to adaptive reuse

Amsterdam, Netherlands

In Amsterdam, the HUL workshop conducted on May 30-31st, 2018 with the participation of 57 participants (25 local stakeholders and 32 CLIC partners) resulted in a total number of 164 barriers to adaptive reuse of cultural heritage concerned with the multiple levels of decision making, including the building scale (#PdZ – Pakhuis de Zwijger), urban scale (#Amsterdam), national (the Netherlands) and European scales.

Among these 164 barriers categorized under the PESTEL-CA dimensions, the most encountered category is concerned with governance and administrative issues. As presented in Figure 7depicting the distribution of barriers based on the PESTEL-CA categorization, the administrative barriers (N:50, 30%) are followed by regulatory / legal issues (N:36, 22%), economic (N:20, 12%) and cultural barriers (N:20, 12%), social (N:15, 9%), technological (N:12, 7%), environmental (N:7, 4%), and lastly political concerns (N: 4, 2%), respectively. The conflict of interests and priorities among the wide range of stakeholders, and lack of effective coordination and communication among them are

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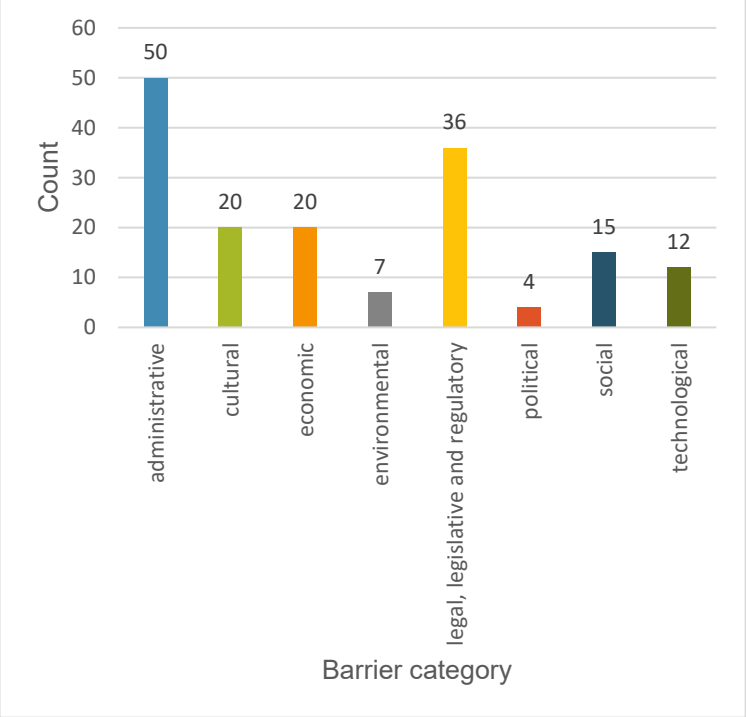
significant barriers. In addition, overgrowth of tourism and the limitations of the existing regulatory frameworks to provide the basis for sustainable tourism with increased accessibility, mobility and adequate zoning are also concerns to be addressed at legal dimension.

Figure 7 - PESTEL-CA categorization of barriers in Amsterdam



Source: Authors

Below is presented the list of main barriers categorized under the eight dimensions of PESTEL-CA framework, with explanations derived from the original reflections of the local stakeholders coded through content analysis:

Administrative barriers:

1. **Lack of collaboration** (General Data Protection Regulation GDPR, unclear city maps that are old or not updated)
2. **Lack of cooperation and communication** (not communicating with other sectors during mapping and planning processes, difficulty of involving different professionals on the same agenda)
3. **Lack of participation** (priorities sometimes being driven by politicians without public consultations, consensus / priority)
4. **Lack of trust** (absence of collaborative mindset in partnerships)
5. **Conflict of priorities** (diverse agendas of various stakeholders, external interest prevail, difficulty in mediating between different stakeholders and interests, interests of property developers prioritised)
6. **Inclusiveness** (elitist partnerships)

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7. **Conflict – competition** (competition among stakeholders)
8. **Lack of awareness** (absence of knowledge about potential partnerships and partners)
9. **Time** (time consuming partnerships)

Legal / regulatory barriers:

1. **Framework: incomplete, lacking, fragmented, complex** (no recognition of expertise, no legal framework for circular economy and adaptive reuse, fragmented legislation at different levels; lack of neighborhood planning framework; European and Dutch legal frameworks mismatching)
2. **Accessibility** (diverse needs of different social and age groups; planning for the disabled)
3. **Zoning** (limitations of traditional planning schemes to separate function between areas)
4. **High rise** (construction of tall buildings close to the Canal Area)
5. **Tourism and mobility** (touring cars, vehicles and tour boats creating overcrowding in the city centre)
6. **Inadequate regulations / building codes** (absence of regulations on collaborative processes; heritage policies related to limit acceptable change grading unrelated to values; heritage status of unlisted buildings, i.e. highrise buildings in the Sluisbuurt; solar Photovoltaic pannels placed on monuments)
7. **Monitoring** (no cycles of monitoring for policy frameworks)
8. **Lack of transparency** (legislation on built environment created on spot)
9. **Role of government** (dominant involvement of local authorities, but only on regulatory or financial issues)

Cultural barriers:

1. **Lack of integration** (different layers of cultural heritage is not integrated into the circularity framework)
2. **Conflict of interest** (integrating different languages and visions)
3. **Intangible dimension** (consensus on shared intangible values, mapping of intangible resources, focus on tangible heritage)
4. **Lack of knowledge** (not understanding values holistically)
5. **Lack of sense of belonging**
6. **Lack of awareness** (absence of knowledge on the vulnerabilities of built heritage, and values attached to cultural heritage)
7. **Controversial heritage** (colonial architecture, association with dark periods)

Economic barriers:

1. **Lack of funding** (money availability, limited public funding)
2. **Conflict of priorities** (leverage of big funders for reaching consensus)
3. **Gentrification** (significant rise in rents)
4. **Temporality in business models** (temporary projects tend to be permanent)

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5. **Lack of incentives** (lack of incentives for circular initiatives)
6. **Costs** (increased labor costs of deconstruction)

Social barriers:

1. **Inclusiveness** (critical sensitivities)
2. **Lack of interest** (of the communities)
3. **Lack of public participation** (limited community support)
4. **Tourism** (overcrowding and overpopulation)
5. **Gentrification** (citizens cannot afford to live in the city centre)
6. **Attitude and mindset** (regulations perceived as constraints, lack of social perspective in conservation sector)

Technological barriers:

1. **Data management** (complexity of available big data, issues of confidentiality / accessibility to data, data inter-operability, hard to access non-digital data)
2. **Lack of data**
3. **Lack of capacity** (unrecognized or unused data)
4. **Being outdated** (rapid technological / industrial changes)
5. **Physical structure** (historic buildings not flexible; climatic adaptation)

Environmental barriers:

1. **Lack of knowledge** (on environmental dimension of adaptive reuse)
2. **Low energy efficiency** (construction companies using low energy performances as an excuse for demolish / rebuild)
3. **Limitations of waste management** (waste treatment investments vs new technologies and awareness)
4. **Lack of material passports** (prevents the reuse of materials in constructions)

Political barriers:

1. **Role of government** (ambiguity on the role of the government)
2. **Lack of leadership** (no facilitator role within the government)

The complexity mapping depicting the classification and distribution of barriers to adaptive reuse in Amsterdam (Figure 8) also manifests direct linkages between categories and barriers, and reveals how certain barriers (shown in gray) are common to more than one dimension of the PESTEL-CA framework. For instance, barriers related to tourism, both concerning overgrowth and lack of sustainable tourism approaches, present issues to be addressed at administrative, legal, cultural, economic and social levels.

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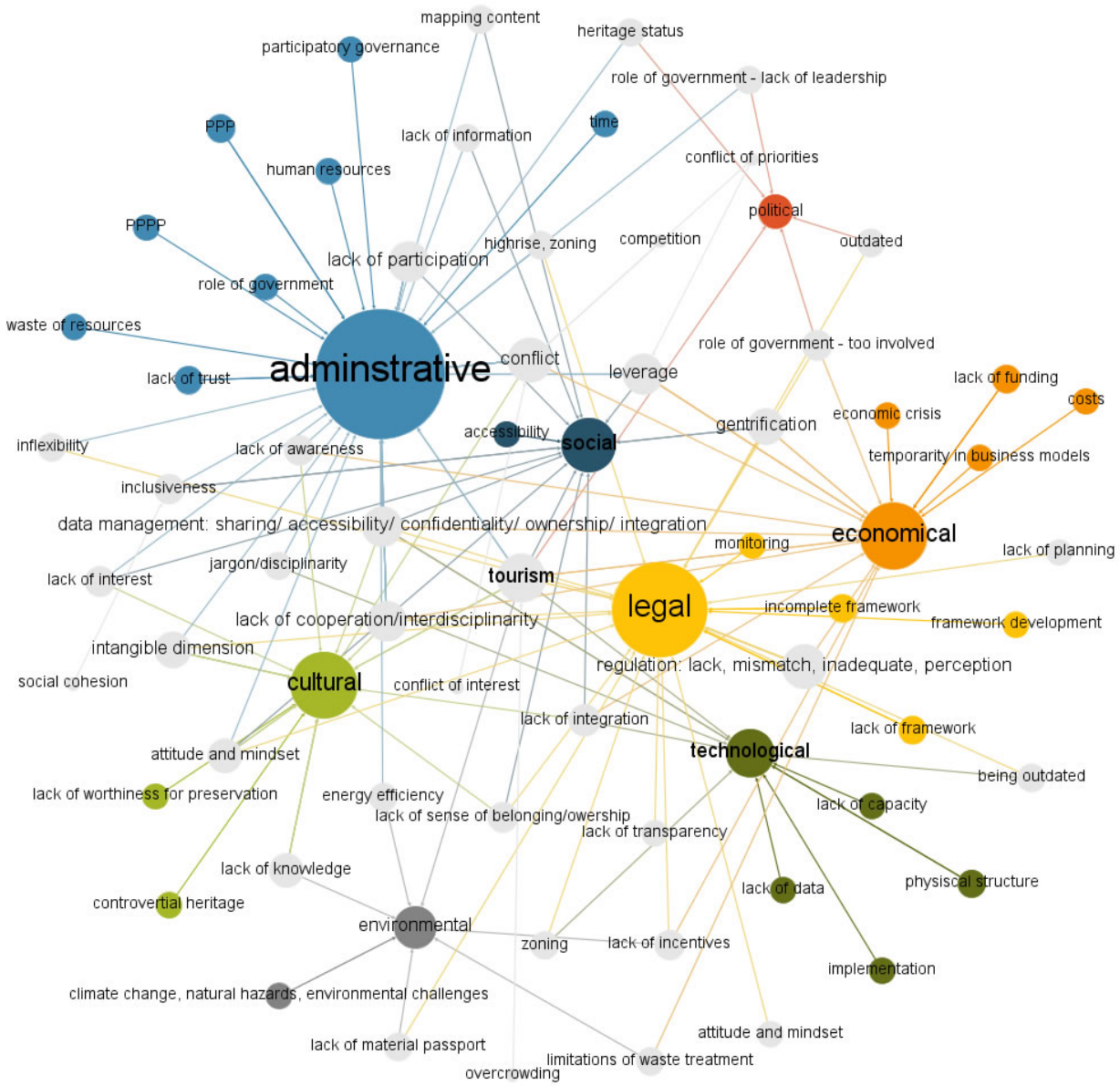
Figure 8 - Complexity mapping of barriers in Amsterdam



Source: Authors

In regards to the distribution of barriers based on the six HUL steps, the Figure 9 clearly shows mostly articulated concerns are associated with the integration of heritage conservation and adaptive reuse into the wider urban development framework. These issues are mostly to be tackled through legislative, political and economic mechanisms (as shown in gray in Figure 9). In addition to integration, mapping and vulnerability concerns are also highly mentioned by the stakeholders. More participatory and inclusive methods are necessary for mapping, complementary to the data management issues to be tackled. As for vulnerability concerns, necessary environmental, economic and social based solutions should be developed to address these barriers.

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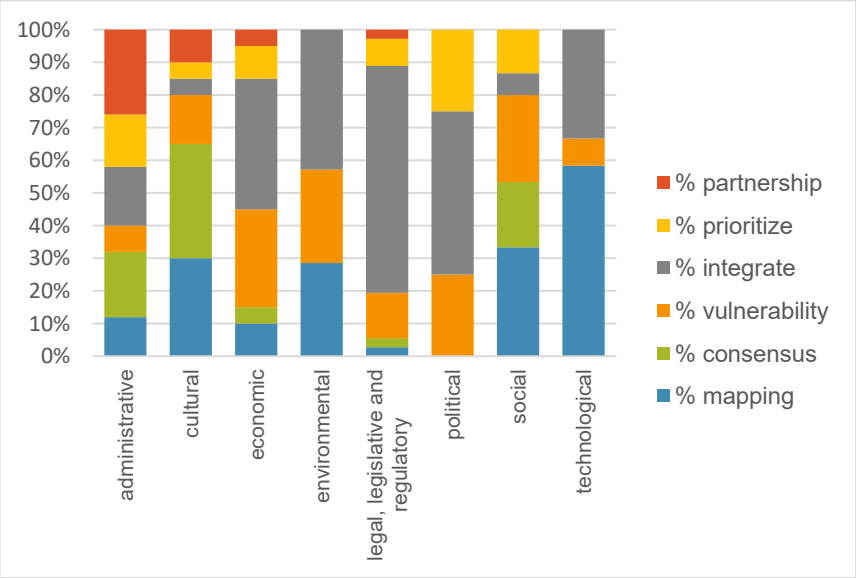
Figure 9 - Distribution of barriers based on the six HUL steps



Source: Authors

Salerno, Italy

In Salerno, the HUL workshop conducted in November 2018 resulted in a total number of 354 barriers identified by the participating stakeholders. These barriers address different levels of adaptive reuse policies and practices, including the site level (Giardino della MInerva), the urban level (Salerno), and the national level (Italy) and European scales.

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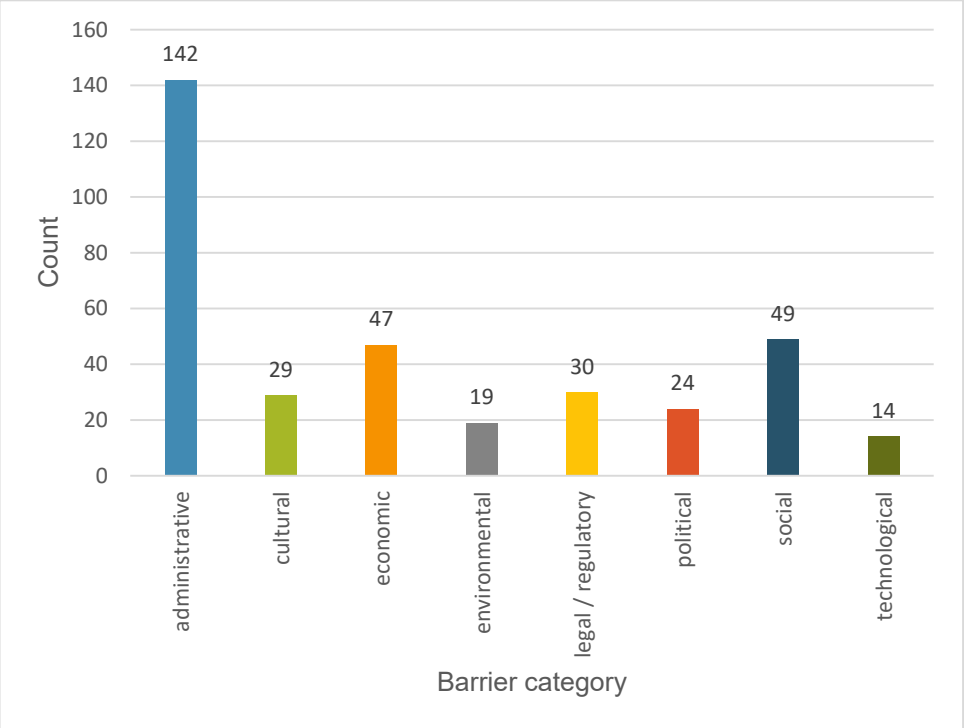
Figure 10 -PESTEL-CA categorization of barriers in Salerno



Source: Authors

The division of these barriers based on the PESTEL-CA framework, as shown in Figure 10, demonstrate that the most articulated category by the stakeholders is concerned with administrative and governance barriers. These are associated with the limited public participation and stakeholder engagement in decision making, leading to lack of collaboration, communication and trust among all the relevant actors. The limitations of the existing legislative framework, time consuming bureaucracy and processes, and lack of sufficient capacity and resources are also concerns most commonly articulated by the participants of the HUL workshop, as shown in **Figure 11**. Social and economic issues are highest next two categories, implicating concerns over lack of knowledge and interest, lack of capacity and job opportunities, limited funding resources, as well as issues related to seasonal tourism in the city. These barriers are followed by legal / regulatory, cultural political, environmental and technical / technological barriers, respectively. The main barriers identified in relation to the PESTEL-CA dimensions are depicted in **Figure 11**, which also manifests the density of these barriers in terms of impact on adaptive reuse, as well as their connections to one another.

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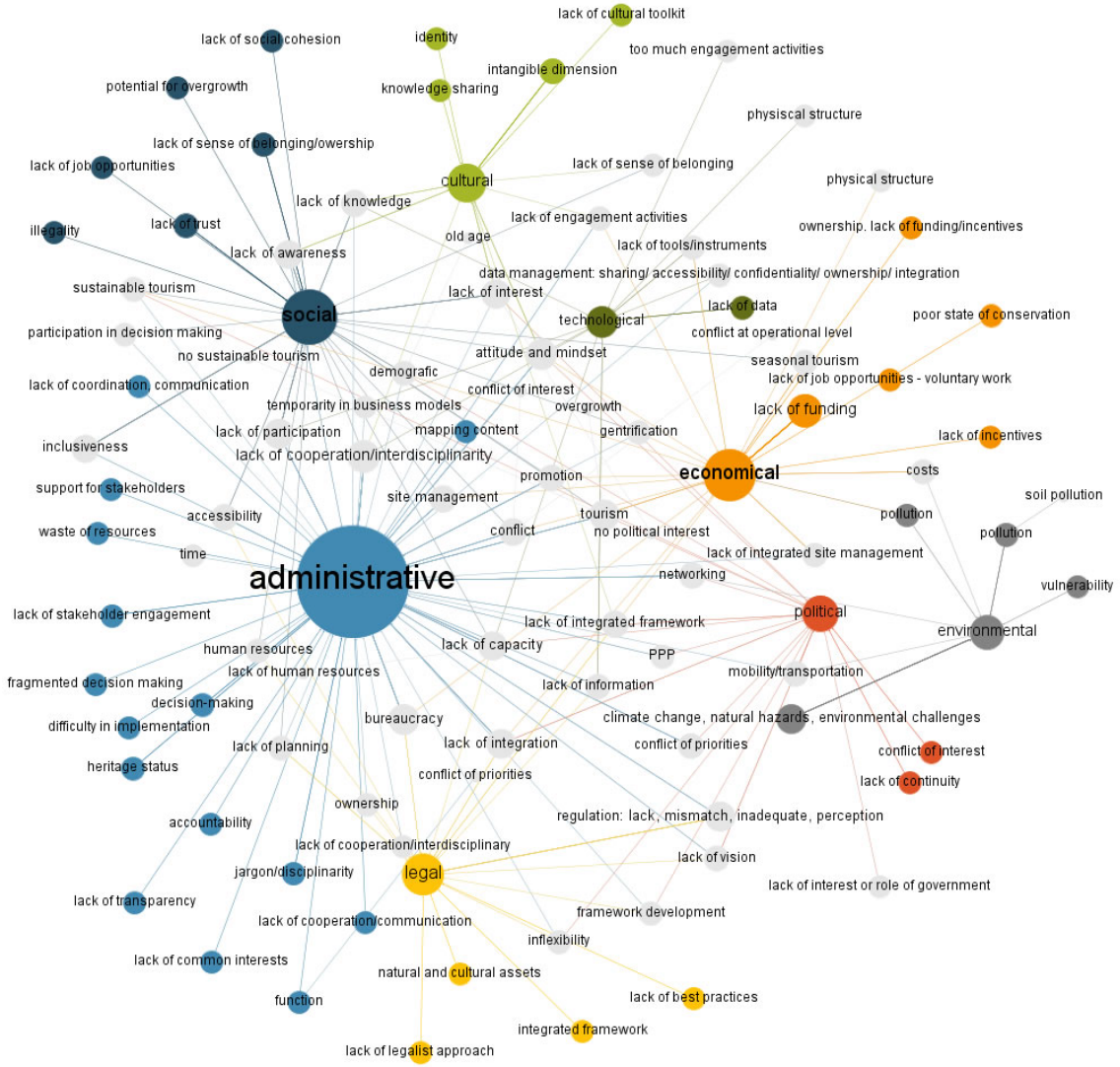
Figure 11 - Complexity mapping of barriers in Salerno



Source: Authors

Below, the list of main barriers categorized under the eight dimensions of PESTEL-CA framework is presented with explanations derived from the original reflections of the local stakeholders coded through content analysis:

Administrative barriers:

1. **Lack of collaboration** (collaborative and participatory actions are limited, stakeholders are not always willing to collaborate)
2. **Lack of stakeholder engagement** (not involving the private parties)
3. **Lack of trust** (difficulty of involving community when they are skeptical or in bad relation with the municipality)

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4. **Lack of cooperation and communication** (difficulty of communication among property owners, lack of spatial network, presence of numerous independent cultural organisations operating individually)
5. **Time** (time consuming mapping processes)
6. **Lack of participation** (heritage conservation often being a top-down process, lack of citizen involvement)
7. **Conflict of interest** (different values and interests, different priorities and development in urban and rural areas)
8. **Lack of capacity** (not being familiar with the existing/potential tools of participatory governance, lack of a competent body within the municipality to manage bottom-up reuse projects, lack of supervision for cultural activities)
9. **Decision making** (number of stakeholders participating in the decision making process, lack of bottom-up initiatives)
10. **Bureaucracy** (time consuming procedures for consultancy and permits, multiple authorities)
11. **Lack of engagement activities**

Social barriers:

1. **Lack of capacity** (no experts to do the mapping)
2. **Inclusiveness** (including the users in addition to experts into mapping, not being able to reach all stakeholders in a participatory process, target group being too specific – students and tourists,)
3. **Lack of interest** (difficulty of involving the community for intangible values, no specification of place for public involvement, unfavorable logistic position)
4. **Lack of knowledge** (social activities take place without announcement, lack of knowledge on the realization of reuse projects)
5. **Lack of public participation** (lack of community involvement – top down initiatives, lack of youth involvement)
6. **Promotion** (lack of participatory promotion of place for a wider audience)
7. **Attitude and mindset** (heritage advocates vs rest of the society)
8. **Conflict of interest** (fast growing societies and exploitation of tourism which create individual agendas, community vs developers)
9. **Lack of awareness** (territorial contexts: citizens not educated in regards to cultural heritage)
10. **Demographic** (elderly population, age, areas facing population loss)
11. **Lack of job opportunities** (temporary employment, high voluntary work)
12. **Lack of social cohesion** (division among citizens)

Economic barriers:

1. **Lack of funding** (funding from the Ministry of Cultural Heritage not yet available, lack of financial resources, lack of funds for private and public sector in conservation)
2. **Limited external resources** (very little access to Europeans funding)

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3. **Promotion** (highlighting the potential of the territory, lack of a strong branding, lack of visibility, little promotion of best practices)
4. **Gentrification** (tourist-oriented business models)
5. **Seasonality – seasonal tourism** (competition with Amalfi cost and other contexts nearby, the Amalfi cost seasonality – intense summer season inducing loss of typical services)
6. **Conflict** (conflict at operational level – integrated ticket)
7. **Lack of vision** (no vision for circular economy)
8. **Lack of incentives**
9. **Costs** (maintenance costs, high costs for energy efficient refurbishments)
10. **Lack of tools / instruments** (no circular financial models)

Legal / regulatory barriers:

1. **Framework: incomplete, lacking, fragmented, complex** (heritage management not included in local/regional/urban development strategies, no cross-sectoral approach)
2. **Regulation: lack, mismatch, inadequate, perception** (General Data Protection Regulation, limited health and safety considerations, use of incompatible materials in restorations for legislation compliance)
3. **Tourism – overgrowth** (distinction between public and private space, no future considerations for overgrowth scenarios, carrying capacity, cycles of tourism intensity)
4. **Tourism – sustainable tourism** (no sustainable tourism planning, business models focused on tourism, too much focus on tourism, increase in tourism focused on the city, not city as pit stop)
5. **Accessibility** (problems of mobility and tourism pressure in narrow streets, geographic position, disability accessibility)
6. **Mobility / transportation** (traffic / parking planning, public transport not used)
7. **Ownership** (abandoned buildings due to ownership issues – private ownership or diverse public actors)
8. **Heritage status** (focus on monument)
9. **Illegality** (criminal intrusions)
10. **Lack of integration** (cultural heritage not involved in development programs – e.g. smart specialization strategies, European strategy and regional strategy)

Cultural barriers:

1. **Lack of sense of belonging** (people do not feel connected to private properties, such as private gardens)
2. **Lack of interest** (some citizens do not care for their cultural heritage, values to highlight Salerno touristic centre)
3. **Lack of information sharing** (exporting the Salerno model)
4. **Intangible dimension** (values to highlight the renowned medieval history of the city)

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5. **Lack of awareness** (lack of understanding the value of cultural heritage by the public)
6. **Site management** (exploitation of cultural heritage and misuse)
7. **Attitude and mindset** (value creation for profit)
8. **Lack of cultural toolkit** (cultural toolkit – plans, listed buildings etc)

Political barriers:

1. **Lack of transparency** (steered information)
2. **Conflict of priorities** (need for a political consensus from the citizens)
3. **Inflexibility** (public sector being too structured or enclosed)
4. **Lack of vision** (no political vision)
5. **Lack of interest** (from politicians)
6. **PPP** (limited involvement of the province for political reasons)

Environmental barriers:

1. **Pollution** (garbage and odours, over-building, soil contamination)
2. **Climatic adaptation** (climate change, street formation not adequate for heavy rainfall)
3. **Natural hazards, environmental threats** (natural hazards damaging structures and facades, hydrogeological threats, eruption of Vesuvius, seismic risk, volcanic risk)
4. **Vulnerability** (hyrdrogeological-soil morphology, soil seismicity)

Technological / technical barriers:

1. **Data management** (hard to access non-digital data)
2. **Lack of data** (absence of data from crisis periods – i.e. war, flooding -, absence of local knowledge)
3. **Physical structure** (monasteries are not flexible for reuse, limited maintenance)

Regarding the distribution of the barriers based on the six HUL steps, as demonstrated in Figure 12, it is derived that the identified barriers are mostly concerned with the prioritization of heritage conservation and development, and vulnerability issues. Mapping is the least mentioned concerned, compared to Amsterdam where mapping step has been one of the highly debated topic.

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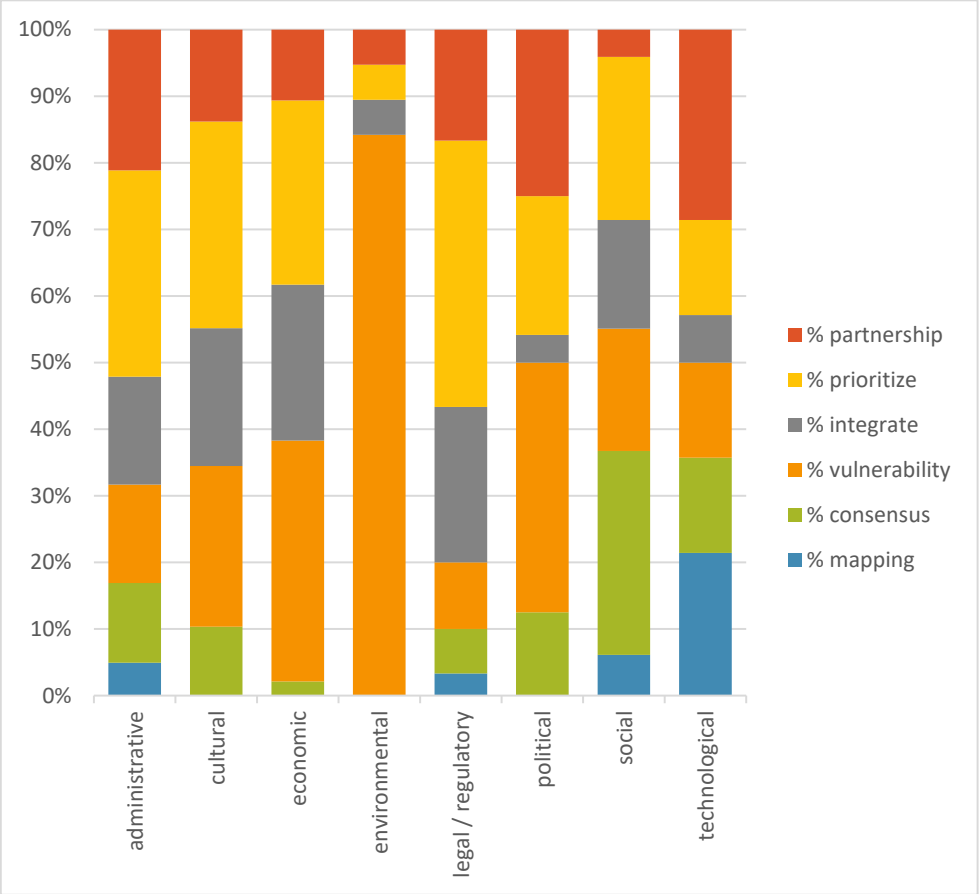
Figure 12 - Division of barriers based on 6 HUL steps



Source: Authors

Rijeka, Croatia

In the city of Rijeka, 35 participants (10 local stakeholders and 25 CLIC partners) participated in the HUL workshop conducted on March 28th, 2019. Based on the reflections of participants penned during the discussions held for each of the six sessions, a total number of 124 barriers are identified referring to the city of Rijeka at urban level, and the selected cases of Rihub and Galeb at building/site level.

As depicted in Figure 13, among these 124 barriers, the most commonly encountered ones are administrative problems (N: 51, 41%), followed by social (N: 20, 16%), legal/legislative/ regulatory (N: 15, 12%), cultural (N:13, 10%), economic (N: 11, 9%), technical/technological (N: 6, 5%), environmental (N:5, 4%) and political barriers (N: 3, 2%) to adaptive reuse of cultural heritage, respectively.

Furthermore, the list of barriers in Rijeka and the complexity mapping in Figure 14 demonstrate that the main barriers to adaptive reuse of cultural heritage in the city rely on limitations associated with the governance and decision making structure and legislation. The top-down governance model and lack of transparency restrict the collaboration, communication and cooperation among the local stakeholders. The outdated regulatory framework do not support citizen engagement to the

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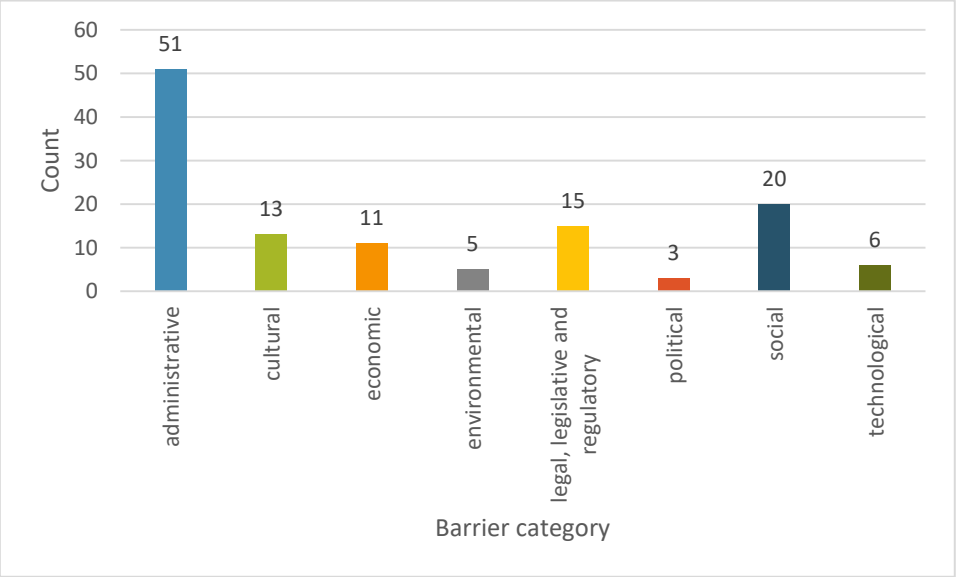
processes, and coupled with the lack of interest among citizens, limited public participation prevails in the city. In addition, lack of zoning, sustainable tourism, transportation and mobility plans also limits accessibility and sustainable development in the historic areas.

Figure 13 - The distribution of barriers based on PESTEL-CA categories in Rijeka



Source: Authors

This statistical analysis manifests that administrative barriers are far the most commonly faced problems by local stakeholders at multilevel decision making for adaptive reuse policies and practices. It also demonstrates that social problems related to lack of participation, awareness and human resources, and limitations of existing legislative frameworks are also regarded as primary barriers to adaptive reuse in Rijeka. A more in depth look into these barriers categorized under the PESTEL-CA dimensions will enable a better understanding of the challenges encountered and the reasons behind.

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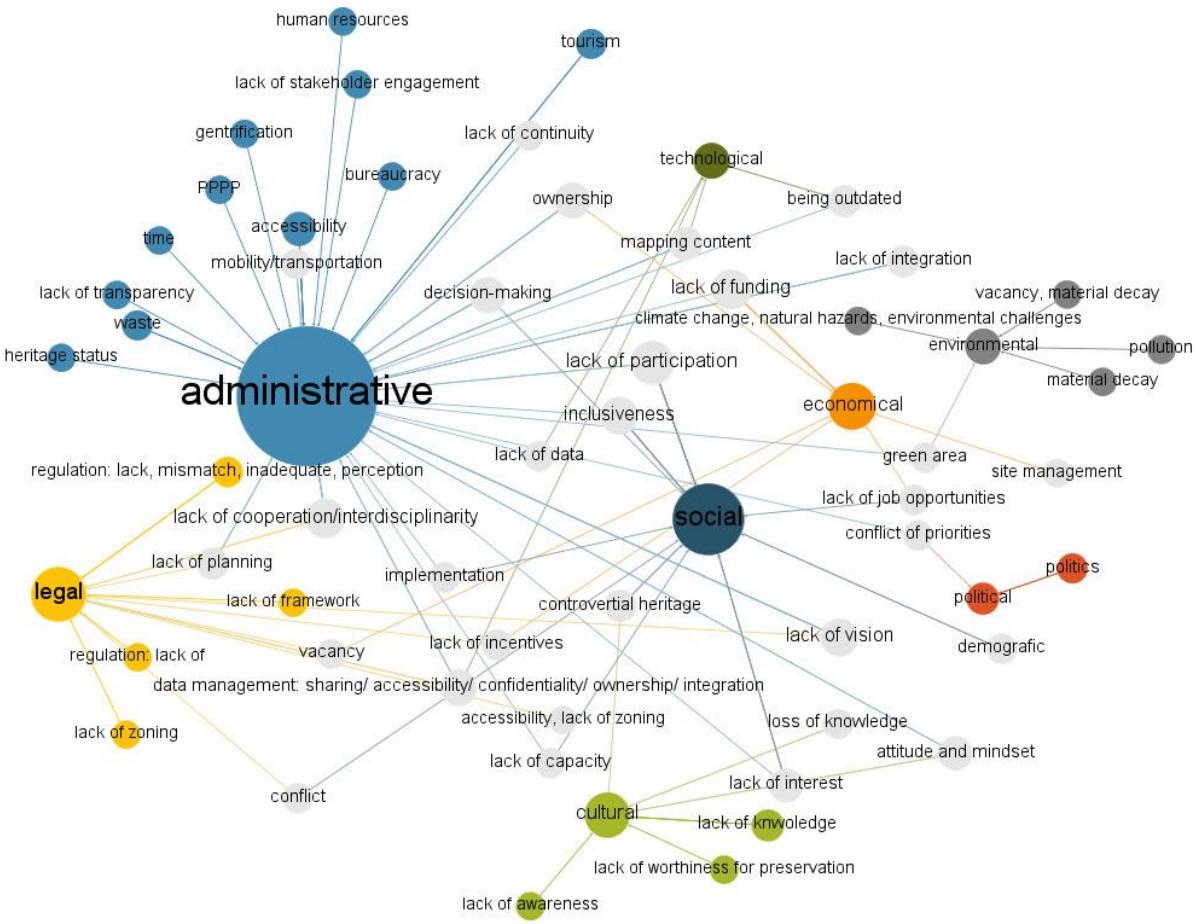
Figure 14 - Complexity mapping of barriers in Rijeka



Source: Authors

Below, it is presented a list of main barriers categorized under the eight dimensions of PESTEL-CA framework, with explanations coded from the reflections of the stakeholders:

Administrative barriers:

1. **Complexity of ownership** (General Data Protection Regulation GDPR, unclear city maps that are old or not updated)
2. **Bureaucracy** (slow public service and bureaucracy that requires a lot of time, and is not easily accessible; lack of flexibility)
3. **Lack of stakeholder engagement** (lack of interest by citizens and stakeholders to participate)
4. **Data management, lack of data sharing** (lack of collaboration between various data holders, i.e. municipality, state authorities, private parties etc.)
5. **Accessibility** (lack of accessibility, accessibility of the natural resource)

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6. **Lack of participation** (limited participation of various decision makers to different processes, such as mapping)
7. **Reaching consensus** (identifying different value attributes)
8. **Lack of vision** (lack of a joint vision determined with public participation; what is the long-term plan derived from Rijeka2020?)
9. **Conflict of priorities** (different and often conflicting priorities and goals of different stakeholders)
10. **Lack of coordination and cooperation (**limited coordination and communication between different departments of the municipality, as well as different authorities, i.e. the City of Rijeka and the Port Authority)
11. **Lack of citizen engagement** (lack of mechanisms to include communities in decision making processes)
12. **Top-down decision making structure** (prioritization of top-down decisions)
13. **Time consuming processes**

Social barriers:

1. **Human resources** (Insufficient number of experts in administrations)
2. **Lack of interest** (lack of interest towards certain types of cultural heritage by local administrators, as well as citizens)
3. **Lack of public participation** (hard to motivate and engage citizens to decision making processes)
4. **Inclusiveness** (involving local actors into mapping and planning processes)
5. **Demographics** (ageing population)
6. **Lack of job opportunities**

Legal/regulatory barriers:

1. **Limitations of existing regulations** (limited pedestrian routes and mobility)
2. **Mobility/transportation** (lack of safe pedestrian routes)
3. **Zoning** (lack of zoning for reuse designation)
4. **Lack of consensus** (no consensus on the development master plan)
5. **Lack of tourism planning** (overtourism is not monitored or regulated)
6. **Lack of green areas and parking lots** (use of limited green areas as parking lots)
7. **Gentrification** (land use decisions supporting gentrification)

Cultural barriers:

1. **Loss of local knowledge** (ageing population and loss of cultural knowledge)
2. **Lack of worthiness for preservation** (Dark heritage – Tito period, controversial heritage)
3. **Lack of awareness** (unknown cultural economic value)
4. **Attitude and mindset** (recognition of heritage values)

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5. **Lack of understanding** (link between development and reuse)

Economic barriers:

1. **Lack of funding** (lack of sustainable funds and investments, funding ends with Rijeka2020)
2. **Limited financial resources** (small municipalities allocated limited resources for heritage)
3. **Lack of incentives**
4. **Long-term business plan** (lack of long-lasting business models)
5. **PPPP** (lack of people involvement in PPP)

Technological barriers:

1. **Outdated planning tools** (outdated city maps)
2. **Limited data** (difficult to get access to and integrate various databases)

Environmental barriers:

1. **Waste management** (lack of public interest)
2. **Material decay and vacancy** (of unused or underused facilities)
3. **Natural hazards, climate change** (vulnerability of abandoned heritage sites to earthquakes and flooding)
4. **Pollution** (car oriented city)

Political barriers:

1. **Transparency** (lack of transparency between institutions)

In terms of HUL steps of implementation, Figure 15 demonstrates that barriers associated with mapping natural, cultural, and human resources are related to technological, legislative, cultural, social and administrative issues; those associated with reaching consensus on what values and related attributes to protect are mainly linked to social, administrative and regulatory issues; and those about assessing vulnerability is mostly related to environmental, economic and cultural problems. Integration into urban development framework is an issue to be tackled by administrative and social dimension, just like prioritisation of actions for conservation with the addition of political level. Establishment of local partnerships comes out both as a political, administrative and economic problem.

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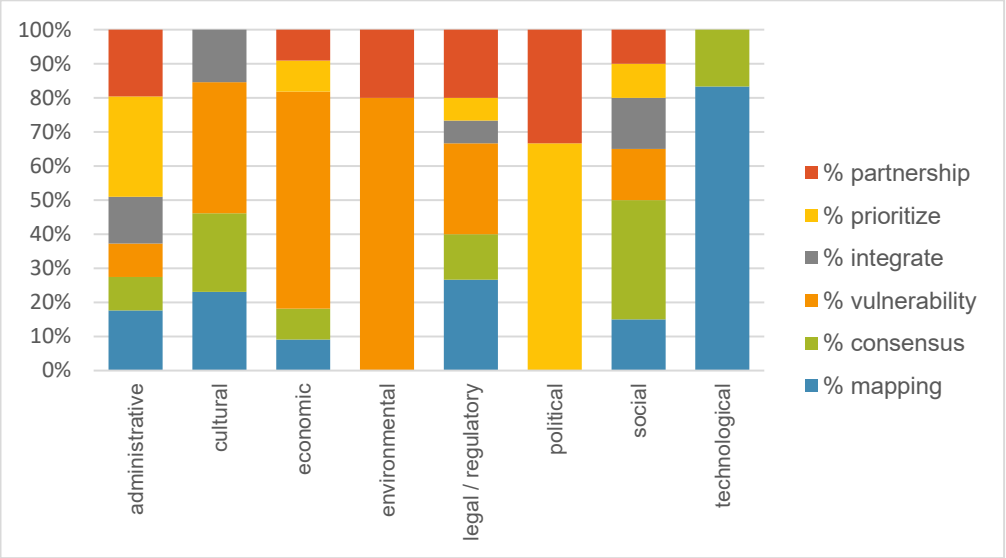
Figure 15 - The distribution of barriers based on HUL steps in Rijeka



Source: Authors

Västra Götaland, Sweden

As described in Section 4, the methodology employed for the identification of barriers to adaptive reuse in Västra Götaland has been different than the other three cases where HUL workshops have been the main data collection tool. In Västra Götaland, the barriers were primarily identified during the first meeting of the Heritage Innovation Partnership (HIP) when stakeholder engagement workshop was conducted. In the first HIP meeting, there have been a total number of 47 barriers identified for the four different cities / areas within the Västra Götaland region (Strömsfors, Fengersfors, Forsvik and Gustavfors) and the region as a whole.

Below is a list of barriers identified during the HIP meeting classified based on the level of governance (the region and the four cities within):

Barriers of Västra Götaland region:

1. **Lack of involvement** (limited community engagement, difficulty of involving people in rural areas)
2. **Investment – limited financial resources** (small municipalities are granted limited financial resources for cultural heritage, private entities are rarely involved in adaptive reuse, high financial demands for investments, low investment returns for individual owners); **lack of private sector** (lack of entrepreneurs who would be interested to develop their business in the area)
3. **Culture perception** (culture is more elitist than exclusive, lack of understanding)
4. **Regulation: lack, mismatch, inadequate, perception** (agreements between municipalities and regions, municipality not allowing reuse, regulations related to environmental issues and working environment, lack of flexibility and regulations in understanding the potential for development)

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5. **Bureaucracy – lack of flexibility** (absence of flexibility in work of municipalities, complexity in their functioning, time consuming procedure)
6. **Lack of understanding** (no understanding of the link between adaptive reuse and sustainable development, sustainable development is regarded as a constraint against interests of residents)

Barriers of Strömsfors:

1. **Lack of attractiveness – focus on nature** (nature as the main attraction for the region)
2. **Lack of collaboration – regional collaboration** (Proximity to Uddebo - these two places are very different in their nature, but belong to two different municipalities. Stromsfors does not benefit from its attractiveness; not many opportunities for collaboration)
3. **Contamination – heavy vehicle traffic** (big road with a heavy traffic)
4. **Demographic – elderly population** (elderly population is not capable to maintain their buildings, neither environment)
5. **Investment – unaffordable local products** (lack of opportunity to afford locally produced, as there are high costs)

Barriers of Fengersfors:

1. **Demographic - depopulation**
2. **Limited housing**
3. **Limited services** (The city depends on the services provided within the fabric nowadays (cafés, restaurants etc.)
4. **Lack of attractiveness – focus on craft sector** (craft sector is not interested on bringing more visitors)
5. **Seasonality – limited services off season** (It is not economically feasible to keep stores and cafes open during winter as there are no visitors)
6. **Regulation: lack, mismatch, inadequate, complex** (long-term ownership and operational issues)
7. **Tourism – lack of sustainable tourism**

Barriers of Forsvik:

1. **Seasonality – tourism** (Typical summer place with activities from mid-May until mid-September, houses are bought only to summer houses)
2. **Lack of attractiveness**
3. **Lack of local and regional interest** (interest in local people and places is not developed)
4. **Lack of capacity and job opportunities** (lack of skilled people with organizational skills, managers or similar who would develop and lead projects)
5. **Degradation and decay** (empty buildings and facilities which are tend to be destroyed by moisture and low temperatures)
6. **Regulation: lack, mismatch, inadequate, perception - lack of flexibility** (municipalities and regulations do not allow the reuse of empty buildings)

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7. **Investment – no real estate market**
8. **Demographic – elderly population**

Barriers of Gustavsfors:

1. **Seasonality – seasonal tourism**
2. **Lack of attractiveness** (difficult to attract people to move to Gustavsfors)
3. **Demographic – depopulation**
4. **Attitude and mindset** (mentality and mindset)

A further assessment of these pre-identified barriers have been through their classification based on the PESTEL-CA framework, and cluster analysis to portray the links and relationship between them in a holistic perspective for the whole region. As the complexity mapping on Figure 16 manifests, the barriers most frequently articulated have been associated primarily with economic concerns (N: 13, 28%) unlike the rest of the case cities where administrative barriers have dominated. This is related to the small scale of the residential areas and lack of major investments and financial support from the regional authorities, in addition to national and European funding for small settlements. Economic problems are followed by cultural (N:8, 17%) and social issues (N:8, 17%), such as lack of attractiveness, interest and demographic problems based on elderly population and depopulation, and administrative barriers. Environmental problems have been barely mentioned, addressing soil contamination and decay of buildings, and no indication for political and technological issues has prevailed.

In addition this type of barrier assessment, a further investigation has been conducted in the HUL workshop that took place in the region in September 2019. As part of this stakeholder workshop, this long list of barriers were further clustered into a list of 15 barriers classified and described based on the four pillars of sustainable development. The participants individually evaluated the impact of these barriers via a digital questionnaire, and identified the best level to tackle the provided barriers.

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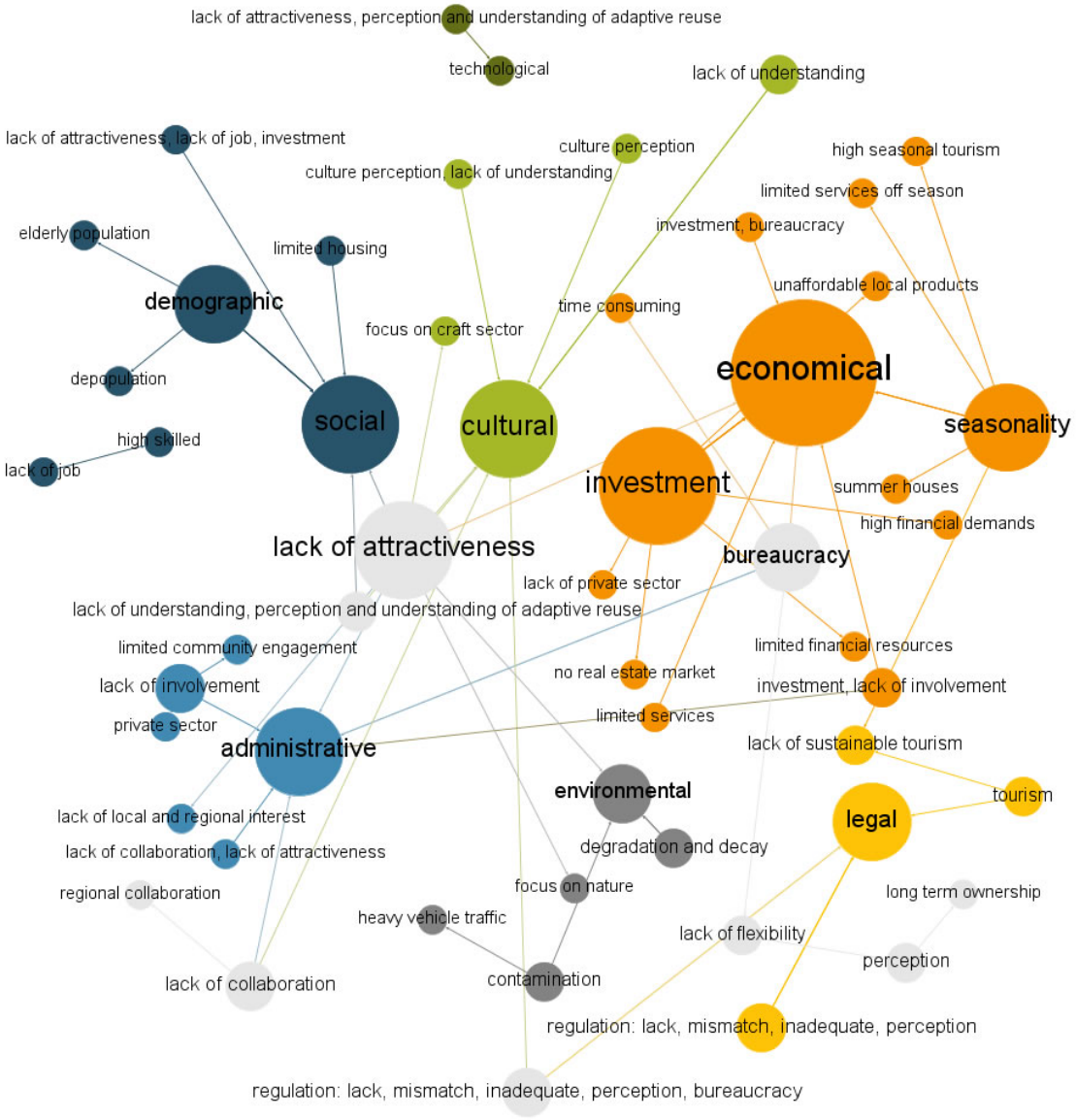
Figure 16 - Complexity mapping of barriers in Västra Götaland



Source: Authors

Below is provided the results of barrier evaluation (Table 6), and the predominant level to tackle a barrier that received more than half of the preferences is shown is bold:

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Table 6 - Best level to tackle the provided barriers as resulted from the questionnaire for the barrier evaluation

Barrier	Local level	Regional level	National level	European level	All levels	Occurrence	Type of barrier
Lack of involvement	**x**					**79%**	**Economic**
Culture perception	**x**					**52%**	**Cultural**
Lack of understanding	x					42%	Cultural
Perception and understanding of adaptive reuse	x					37%	Cultural
Lack of attractiveness	x					37%	Economic
Seasonality		**x**				**52%**	**Economic**
Contamination			**x**			**58%**	**Environmental**
Bureaucracy			**x**			**58%**	**Economic**
Restraining regulations			x			42%	Economic
Investment					**x**	**58%**	**Economic**
Depopulation					**x**	**52%**	**Social**
Lack of job					**x**	**52%**	**Social**
Elderly population					x	42%	Social
Lack of evidences					x	42%	Environmental
Degradation and decay					x	37%	Economic

Source: Authors

Regarding to the applicability of **the barriers, the responses show that all of the pre-defined barriers still apply in the region** but there is a variation in how many respondents replied "Yes". **At least half of the participants**, i.e. 10 answers or more, chose **"Yes" except for the barriers "Elderly population" and "Lack of evidence of environmental benefits**. "Elderly population" and "Lack of evidence of environmental benefits" count 8 affirmative responses (42%) and present less variation in the distribution of answers with "Elderly population" having only 1 response of difference between "Yes" and "No". Participants answered "Yes" or "No" with regards to "Depopulation", "Lack of attractiveness", and "Seasonality" with no "I don't know". Furthermore, for these three barriers at least two third of the answers were affirmative. "Lack of job opportunities" and "Restraining regulation" received as answers only "Yes" or "I don't know": these barriers respectively received around 90% and 74% affirmative responses.

Regarding the administrative level at which to tackle each barrier (Table 6), **at least half of the participants identified the same level as the best one** for almost half of the barriers. This is the

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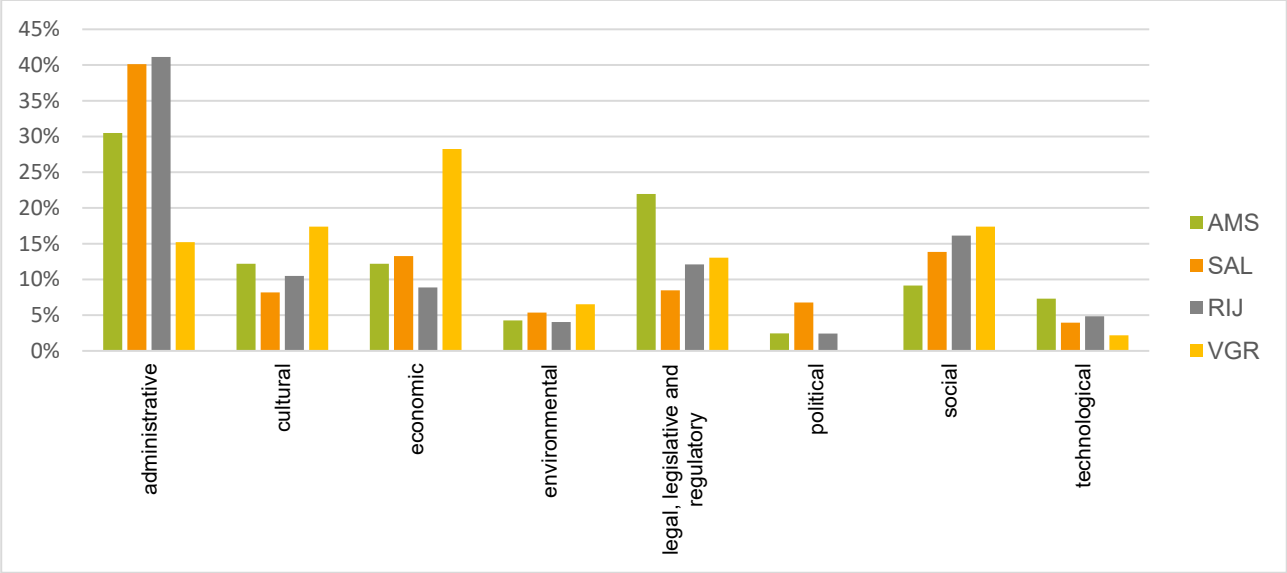
case for **"Depopulation", "Lack of job opportunities", and "Investments"** to be tackled at **"all levels"**; while **"Lack of involvement" and "Culture is regarded as exclusive"** demand to be addressed at the **"local"** level; **"Seasonality"** at the **"Regional"** level; while **"Bureaucracy" and "Contamination"** at the **"National"** level. Similarly, the rest of the barriers present a predominant level for tackling them; however, less than half of the participants indicated the predominant level. Particularly, for **"Restraining regulation"** the levels **"National" and "All levels"** received 8 and 7 choices, respectively. Similarly, there is little difference in the number of respondents for "**All levels" and "Regional"** level with regard to **"Degradation and decay"**: the two answers respectively received 7 and 6 preferences. Table 6 reports the level indicated to be the best one to tackle every barrier. The "Local" level has been chosen as the best level to tackle all cultural barriers, while the "Regional" level has been indicated only for "Seasonality". To tackle "Contamination", "Bureaucracy", and "Restraining regulations"; the "National" level is mainly indicated.

It can thus be derived from the questionnaire that a **multi-level approach** should be preferred for 6 out of 15 barriers, namely "**Investment", "Depopulation", "Lack of job opportunities", "Elderly population", "Lack of evidences", and "Degradation and decay".** Interesting to note that the **European level** has **not been indicated as the preferable level to tackle any of the barriers**. The European level was chosen only twice as the best level to tackle a barrier, namely once for "Lack of evidence of environmental benefits" and once for "Perception and understanding of adaptive reuse".

5.3 Comparative analysis of multiple case study

Based on the barriers identified for all the four CLIC pilot cities, a comparative analysis has been conducted to examine the common trends in adaptive reuse, as well as to compare the diverse tendencies, vulnerabilities, strengths, threats and opportunities as part of the multiple case study analysis. The following chart (Figure 17) depicts the overall distribution of barriers for each case within the context of PESTEL-CA framework.

Figure 17 - Comparison of number of barriers per each PESTEL-CA dimension



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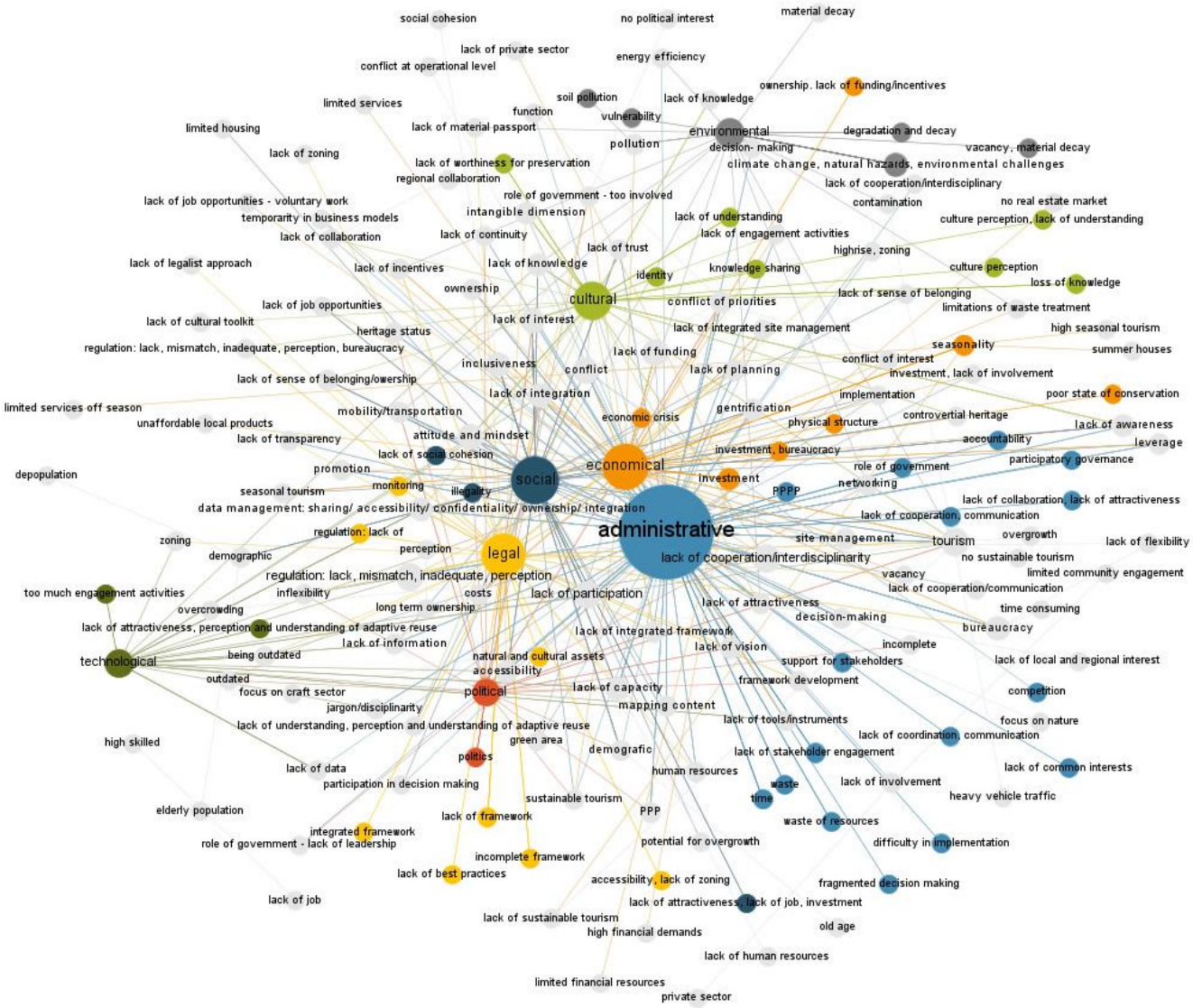
Source: Authors

Figure 18 - Complexity mapping of all main barriers to adaptive reuse



Source: Authors

The full list of main barriers to adaptive reuse are clustered through network analysis and presented in the complexity mapping depicted in Figure 18. This mapping is derived from the integrated assessment of the multiple case study examining and categorizing the barriers for each CLIC pilot city based on the PESTEL-CA framework. Below is presented a summary of the outcomes of the comparative analysis. It is important to keep in mind that the data collection methodology employed in Västra Götaland is different from the other three, resulting in a lesser number of barriers and solutions derived from that specific case assessment. The main outcomes of the multiple case study is as follows:

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- **Predominant administrative barriers, except for Västra Götaland:** In Amsterdam, Salerno and Rijeka, the predominant category of barriers to adaptive reuse have been identified as administrative and governance issues, based on the high number of barriers clustered under this category. Lack of cooperation, collaboration and communication, and public participation have been the main concerns in relation to decision making, emphasizing the necessity of open dialogue and participatory processes of governance and decision making to tackle these administrative barriers.

- **Lack of funding and financial resources is a common economic barrier:** Economic barriers included mostly common problems associated with limited funding and financial resources for the adaptive reuse of cultural heritage. However, the context of these limitations varies based on the size, scale and governance model of the cities. In Amsterdam, the focus has been on the lack of cooperation and communication between different public and private parties, resulting in problems arising in public-private partnerships. In Salerno and Rijeka, limited public investments from the national authorities have been articulated as the biggest concern. Similarly, lack of public investments has also been an issue in Västra Götaland, paired with lack of interest from entrepreneurs and private investors. It was only in Västra Götaland where the economic barriers have gone ahead of the administrative barriers. It is associated with the small scale of the residential areas and lack of major investments and financial support from the regional authorities, in addition to national and European funding for small settlements.

- **Focus on lack of awareness and knowledge is the social and cultural trends:** In all the four cases, social and cultural barriers followed similar trends, coming as third or fourth most important category of barriers to adaptive reuse. One of the most commonly articulated problem in this context has been the lack of awareness on cultural heritage, its significance and potential for adaptive reuse and circular economy.

- **Different trends of tourism impact:** The topic of tourism has come out as a major issue in all the four cases, following different trajectories: In Amsterdam, overtourism has been a major concern having regulatory, economic, social and cultural impacts on adaptive reuse. In Salerno and Västra Götaland, seasonality of tourism activities have been presented as a barrier, resulting in seasonality in business and economic activities and temporality in the job and real estate markets.

- **Limited reference to environmental threats and issues:** In all the four cases, the reference to environmental concerns including the impact of climate change, natural hazards, as well as pollution and environmental degradation and decay of buildings and sites have been highly limited (7% in Västra Götaland, 5% in Rijeka and 4% in Amsterdam and Salerno). Only in Salerno, the natural threats, such as risk of volcanic eruption and earthquakes, have been indicated. The reason of limited reference to environmental threats and issues relies on the lack of awareness on environmental concerns, and the ongoing gap about the link between climate change and its impact on the cultural heritage.

- **Technological issues mainly related to mapping and data management:** In the normative literature, barriers related to the physical structure of the historic buildings and issues concerned with its adaptation played a significant role. However, in the HUL workshops, these issues have been barely indicated. This is based on the holistic view of the historic landscape approach extending the context of cultural heritage that used to be limited to individual building and site scale.

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5.4 Common barriers to adaptive reuse

The case specific barriers to adaptive reuse identified and their comparative analysis articulated in Section 5.3 have provided the basis for a full list of barriers to adaptive reuse of cultural heritage. In the following section, section 0, this list of all barriers and their densities are provided. It is followed by in-depth assessment and examination of the predominant barriers deduced from the multiple case study analysis and the literature.

Full list of barriers identified in the HUL workshops

The full list of barriers to adaptive reuse of cultural heritage, as derived from the multiple case study is presented in Table 8. They are decreasingly listed based on their densities derived from the number of issues associated with the main barrier as part of the multiple case study analysis. As some barriers are classified under more than one PESTEL-CA dimension, this list is not divided into these categories.

The full list of barriers includes:

Table 7 - Full List of Barriers to Adaptive Reuse Main

Barriers	Density (no)
conflict	34
lack of cooperation/interdisciplinary	
lack of participation	32
regulation	
tourism	
lack of funding	28
attitude and mindset	23
lack of integration	19
lack of interest	
bureaucracy	18
framework	
inclusiveness	
climate change, natural hazards, environmental challenges	16
data management	
lack of capacity	
lack of awareness	14
accessibility	13
lack of knowledge	
decision-making	12
intangible dimension	
lack of vision	11
demographic	10

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gentrification	
site management	9
lack of planning	8
lack of information	7
mapping content	
mobility/transportation	
networking	
ownership	
promotion	
seasonality	
investment	6
lack of incentives	
lack of sense of belonging/ownership	
pollution	
role of government	
being outdated	5
costs	
heritage status	
human resources	
inflexibility	
lack of data	
lack of trust	
leverage	
PPP	
zoning	
controversial heritage	4
implementation	
jargon/disciplinarity	
lack of attractiveness	
lack of engagement activities	
lack of integrated site management	
lack of job opportunities	
lack of tools/instruments	
physical structure	
degradation and decay	3
lack of continuity	
lack of cooperation, communication	
lack of stakeholder engagement	
lack of transparency	
time	

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culture perception	2
energy efficiency	
green area	
incomplete	
lack of collaboration	
lack of material passport	
lack of sense of belonging	
lack of understanding	
lack of understanding, perception and understanding of adaptive reuse	
lack of worthiness for preservation	
limitations of waste treatment	
loss of knowledge	
outdated	
politics	
PPPP	
regulation, bureaucracy	
temporarity in business models	
vacancy	
waste	
waste of resources	
accountability	1
contamination - heavy vehicle traffic	
economic crisis	
identity	
illegality	
investment, lack of involvement - private sector	
knowledge sharing	
lack of attractiveness, lack of job - high skilled, investment	
lack of attractiveness, perception and understanding of adaptive reuse	
lack of best practices	
lack of collaboration - regional collaboration, lack of attractiveness - lack of local and regional interest	
lack of common interests	
lack of coordination, communication	
lack of cultural toolkit	
lack of involvement - limited community engagement	
lack of legalist approach	
lack of social cohesion	
limited housing	

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limited services	
material decay	
monitoring	
natural and cultural assets	
ownership, lack of funding/incentives	
participatory governance	
potential for overgrowth	
support for stakeholders	
too much engagement activities	
vacancy, material decay	
vulnerability	
TOTAL	111

Source: Authors

Assessment of common barriers

The multiple case study to assess adaptive reuse barriers (Figure 19) points out that the **four main categories of barriers revolt around: administrative, economic, social and cultural barriers**. The administrative barriers are mainly associated with the multi-level decision making processes for cultural heritage adaptive reuse focusing on collaboration and communication between the wide range of stakeholders involved. The conflict of interests among different parties, lack of collaboration and cooperation, and lack of participation of certain actors, citizen engagement and public participation specifically, pose challenges to effective adaptive reuse.

The economic barriers are primarily related to the lack of funding, but also the limited access to financial resources, limited incentives and changing market dynamics. Social barriers to cultural heritage adaptive reuse usually emerge from various factors, such as the perceptions, values and norms accepted within the society or the governance domain. Limited public participation and willingness to act, as well as lack of awareness on the benefits of adaptive reuse have also emerged as major factors constraining reuse processes. It is also noted that legislative/regulatory barriers often interact with administrative and socio-cultural barriers for decision concerning adaptive reuse. For instance, limitations in the existing regulatory framework designating a timeframe for the protection of heritage buildings and sites also affects the values attributed to these properties by the experts and society, thus impacting the decision given for its reuse or demolition.

In this context, the following word cloud (Figure 19) clearly present the salient barriers to adaptive reuse, enlarged based on the density measures derived from the number of indications of such challenges by the local stakeholders during the multiple case assessment. Among the full list of 111 barriers to adaptive reuse presented in Section 0, the predominant barriers that have densities of 16 and over are then further examined individually, and described more in depth based on the results of the multiple case study analysis and the literature review.

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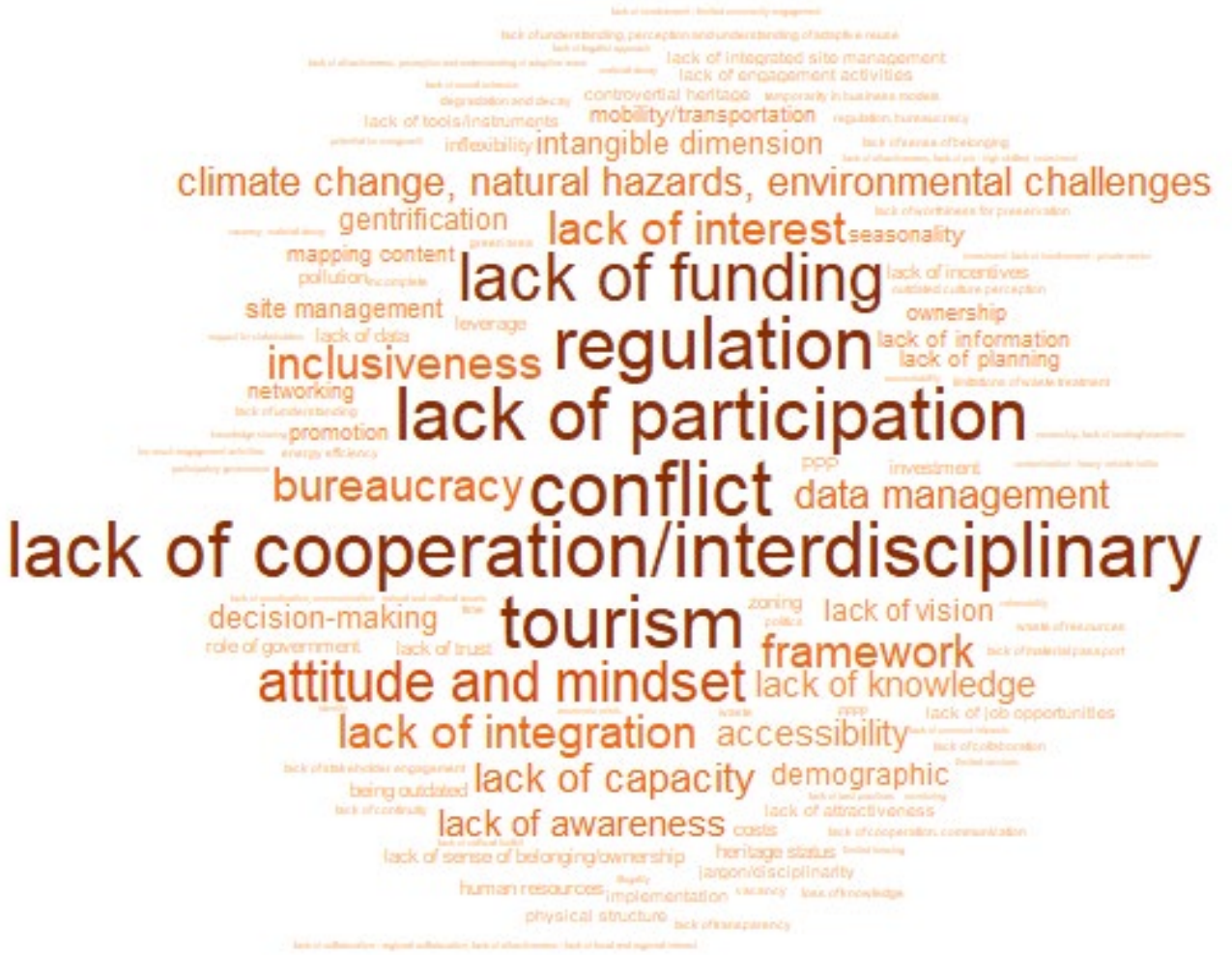
Figure 19 - Word cloud of barriers based on their densities



Source: Authors

The salient barriers to cultural heritage adaptive reuse are listed and explained below:

- **Lack of cooperation and collaboration:** In all the four pilot cities/region examined within the CLIC project, multifaceted and highly complex decision making mechanisms operate for cultural heritage involving a wide range of national and regional administrators, local authorities, experts, private sector bodies, societal organizations, NGO and civil society. Lack of effective communication and collaboration between these diverse decision makers at multiple levels pose a major administrative challenge, which affects prioritization of actions and efficiency in adaptive reuse practices.

- **Conflict of priorities and interests:** In parallel with the plurality of stakeholders and multifaceted governance structures operating in the cities, conflict of priorities and interests among different parties is identified as a major barrier at institutional and governmental context. For instance, the political priorities of national governments or the economic interests of major investors and developers might usually dominate decision making and might suppress the priorities of less-influential actors.

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- **Lack of participation and inclusiveness:** The comparative barrier assessment points out that diverse cultures of engagement operate for each city and region, in regards to different modes of interactions and administration. In each case, however it is also indicated that improved dialogue with stakeholder groups and awareness raising activities enhance better participation of local stakeholders and community groups, and foster inclusiveness.

- **Limitations of existing regulatory frameworks:** The limitations of existing legislative and planning framework concern a number of issues related to ineffective planning process and implementation strategies, inadequate institutional guidelines and procedures (including bureaucracy) on how to carry out adaptive reuse strategies and practices, lack of prioritization process for cultural heritage protection and reuse. Impediments that arise from existing regulations and legislative framework are also noted to be resulting from lack of coordination and communication between various decision makers and ineffective governance systems.

- **Tourism:** The topic of tourism has come out as a major barrier interdependent on administrative, economic and socio-cultural contexts in all the four cities, following different trajectories: In Amsterdam, overtourism has been a major concern having regulatory, economic, social and cultural impacts on adaptive reuse. In Salerno and Västra Götaland, seasonality of tourism activities have been presented as a barrier, resulting in seasonality in business and economic activities and temporality in the job and real estate markets.

- **Lack of funding and financial resources:** The stakeholders impeded lack of funding and limited financial resources to be a considerable factor constraining adaptive reuse practice. Stakeholders responses related to these financial barriers also indicated concern for limited public funding, limited external resources – i.e. limited access to European funding and grants, lack of incentives, and temporality in business models and economic structures related to seasonal tourism activities.

- **Attitude and mindset:** Social and culture-related barriers arising from different mindsets, perceptions, values and norms of diverse actors and societal groups can yield to limited motivation and willingness to act. Barriers associated with attitude and mindset are also concerned with conflicting perceptions about the usefulness and viability of adaptive reuse strategies.

- **Lack of interest and awareness:** Stakeholders documented a concern about the lack of knowledge and limited understanding on how adaptive reuse can be a driver for sustainable development and circular economy. The lack of awareness and knowledge is also linked to limited interest from certain stakeholders, such as developers and national authorities, towards the reuse of cultural heritage as they do not perceive it as financial asset.

- **Bureaucracy:** Bureaucracy is also recognized as an institutional, legal and social barrier leading to time and money consumption in bureaucratic processes of planning and monitoring, loss of interest by local actors and citizens, and inefficient operation of practices that hinder adaptive reuse.

- **Climate change, natural hazards, environmental challenges:** The lack of knowledge and awareness on climate change scenarios for various spatial scales, the natural and human induced threats, paired with lack of comprehensive environmental and vulnerability assessments for diverse cultural heritage types and locations create environmental challenges for adaptive reuse of cultural heritage.

This extensive barrier assessment derived from multiple case study shows the importance to recognize and identify the barriers that impede adaptive reuse strategies and practices. A better understanding of barriers increase the effectiveness and success of response to current and

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potential future challenges, prioritization of adaptive reuse strategies, and increased awareness on its benefits for circular economy.

Barriers in literature and identified through the HUL workshop

The full list of barriers to adaptive reuse of cultural heritage, as derived from the multiple case study and the literature is reported in Table 18 (see Annex 3).

Comparing the identified **barriers** in **literature** and via the **multi-case study**, **common barriers** were found. Despite this, in some cases a different degree of detail is associated to a barrier in one of the sources Table 18 (see Annex 3). The common barriers are here reported using the nomenclature adopted in the multiple case study and sorted by decreasing density as in Table 2 :

- Conflict,
- Regulation (in multi-case analysis has a more broader understanding than in literature),
- Tourism (in multi-case analysis has a more broader understanding than in literature),
- Inclusiveness,
- Lack of knowledge,
- Decision-making (in multi-case analysis has a more broader understanding than in literature),
- Intangible dimension (in multi-case analysis has a more broader understanding than in literature),
- Mobility/transportation,
- Costs (in multi-case analysis has a more broader understanding than in literature),
- Human resources (in multi-case analysis has a more broader understanding than in literature),
- Culture perception,
- Lack of data,
- Zoning,
- Energy efficiency (in multi-case analysis has a more broader understanding than in literature),
- Accountability,
- Contamination - heavy vehicle traffic,
- Identity (in multi-case analysis has a more broader understanding than in literature),
- Lack of awareness (in multi-case analysis has a more broader understanding than in literature),
- Lack of incentives,
- Lack of involvement - limited community engagement,
- Limited services, and
- Material decay.

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On one hand, about **90** categories of barriers have **only been identified in the multi-case study**. These barriers are fully listed in Table 18 (see Annex 3). Among these barriers, the five with **higher density** are: **lack of cooperation and interdisciplinary, lack of participation, lack of funding, attitude and mindset, and lack of integration**. Other examples of barriers not reported in the analyzed literature are: issues related to climate change, accessibility, controversial heritage, data management, jargon and disciplinarity, the lack of material passports, and the lack of sense of belongings.

On the other hand, **11 barriers identified in literature** were **absent** in the list of those identified during the **multiple case study**. These barriers are:

- Balancing cultural significance and economic viability,
- Commercial risk and uncertainty,
- Community value of existing buildings,
- Complexity and technical difficulties,
- Flexibility of buildings to accommodate new use,
- Inability to estimate social viability,
- Inertia of urban development criteria,
- Market opportunity due to location and site,
- Meeting the needs of all relevant stakeholders,
- Significance assessment and changing perceptions of heritage, and
- Supportive governmental policies and strategies.

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6 Solutions and policy enablers to cope with barriers

6.1 Introduction

This section is dedicated to the **identification of solutions to cope with the barriers** listed in section 5, and **examination of policy enablers to facilitate the adoption of relevant policies and strategies at different levels of decision making**. During the HUL workshops, the local stakeholders have provided insights into possible solutions and recommendations to overcome the challenges posed by the adaptive reuse barriers. These suggestions from stakeholders offer future solutions that should focus on a number of tools as elaborated in Section 6.3, which include **knowledge and planning tools, regulatory systems, governance tools, financial instruments, environmental solutions, and educational tools**.

Understanding both the obstacles and opportunities of the implementation of adaptive reuse strategies and practices is key in the development of policy-related guidelines to be adopted at local, national and European levels. Only by acknowledging, the items that hamper or facilitate the adaptation can contribute to strategies and policy proposals that effectively and successfully support adaptive reuse of cultural heritage within circular economy context.

6.2 Solution analysis

In light of the barriers of implementing adaptive reuse of cultural heritage strategies and practices, the stakeholders of the four pilot cities have also suggested a high number of solutions (**538 solutions in total**) . Most of these solutions have been associated with a certain set of barriers to be tackled at multiple levels of governance.

The first step of the solution analysis has been to list the solutions articulated during the workshops by the stakeholders, and their classification and connection to the relevant barriers identified. Due to the high number of solutions suggested, they have been further coded through content analysis. to obtain a **reduced list of 159 solutions** Then in the second step, this reduced number of solutions have been grouped under a set of pre-defined tools of adaptation derived and elaborated from the HUL toolkit to facilitate the adaptive reuse processes. The methodology, reasoning and content of this elaborated set of tools are further explained in detail in the next sub-section (section 6.3). The solutions provided by the stakeholders for each of the barriers are clustered and classified in terms of similarities and alignment with the context of the developed tools of adaptation through cluster analysis.

The following tables provided below (Table 8 to Table 11) presents **the full list of main barriers and associated solutions suggested by the stakeholders** that are grouped under the elaborated tools of adaptation:

Table 8 - Knowledge and Planning related Solutions to Main Barriers of Adaptive Reuse

	Knowledge and Planning		
Barriers	**Mapping**	**Mobility**	**Visitor management**

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accessibility	mapping demands and opportunity; integrate water and industrial history	measurement tools for local access; mobility plan - promote the use of bikes, pedestrian areas, shared vehicles, electric trams	
attitude and mindset	cross-disciplinary teams		
climate change, natural hazards, environmental challenges	mapping ecological footprints at urban level		
conflict	1-participation and inclusiveness in value assessment; 2-stakeholder mapping; 3-games and scenario making		
culture perception	mapping local knowledge		
data management	1-use of new technologies and smart tools; 2-transparency in data sharing and collection		
framework			promotion of social/ green and adaptive initiatives
green area		more walking accessibility, more public spaces	
inclusiveness	inclusiveness in data collection; integrating values and needs of all social groups and communities, inclusiveness		braille and touch panels, app for visually impaired visitors; app for simultaneous translation
intangible dimension	identifying common goods through value assessment		prioritisation of cultural heritage

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lack of attractiveness			free entrance for residents; urban games to attract visitors; more accommodation opportunities and resting areas
lack of collaboration	1- citizen involvement in methodology development; 2- using multi-dimensional models		
lack of data	1-technical support; 2-user-friendly interfaces; 3- using big data and algorithms		
lack of funding			give bonding
lack of integration	1- mapping societal demands and opportunity; 2- fuzzy mapping and facilitator platforms		
lack of interest			cultural routes
lack of involvement	sociotopic mapping, local stakeholders mapping their resources		
lack of knowledge	collaboration, communication and citizen leadership in value assessment		
lack of planning	future scenario development		
lack of sense of belonging	including place history		
limited services		improvement of public transport	

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mobility/transportation		1- passages with removable structures, movable street furniture; 2- special path for mobility impaired visitors; 3-effective signalling systems, sign posting; 4-park and ride, cycle routes	
networking	mapping the underused spaces		
regulation		speed control in historic center	
seasonality		regular trips for local tourists	cultural activities and events in low seasons
zoning	mapping local demands and opportunities		

Source: Authors

Table 9 - Regulatory, Financial and Environmental Solutions to Main Barriers of Adaptive Reuse

Barriers	Regulatory systems	Financial tools	Environmental
attitude and mindset	legal assistance		
being outdated	flexible land use regulations		
climate change, natural hazards, environmental challenges			green spaces and surfaces on buildings. Risk management - anti-seismic systems, rain water canalisation, marine barriers, improvement of structural system but not seismic retrofitting, vulnerability assessment
conflict		more open calls	
contamination		national funds to restore polluted soil	
costs		subsidies to support labour cost	
economic crisis	adaptability and flexibility in regulations		

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energy efficiency			local inhabitant ambassadors on energy efficiency + sustainability
framework	local regulations for neighbourhood planning and monitoring systems		integration - combine heritage conservation + stakeholder needs + green solutions
inflexibility	integrated policies		
investment		public budget for tourism and cultural heritage; public foundation as a solution for public procurement; arena for companies, think tanks, incubator cluster	
lack of attractiveness		create a community brand	
lack of capacity		volunteering	
lack of coordination, communication	creation of a city council department on communicating cultural heritage		collaboration with other EU projects
lack of data			impact of tourism on environmental factors (CO2 consumption, biodegradable waste etc)
lack of funding		various models of PPP; municipality funds for private owners; municipal participatory budget; crowdfunding initiatives by associations; finding private funding sources from foundations, social enterprises etc.	
lack of incentives		temporary renting of unused historic buildings and site; promoting establishment of small enterprises	
lack of interest			sustainable cottages for short-term renting, eco-tourism
lack of job opportunities		creative jobs in cultural heritage	

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seasonality			allow reuse of construction materials, provide material passports
lack of participation		citizens as resource for development	heritage maintenance - citizen involvement
lack of planning	adaptive reuse management plan		
lack of tools/instruments	concession or rent contract for acquiring legal use of building	open creative tenders; cooperative ownership; sharing economy (pool for consumption)	
lack of transparency	well-planned and proactive property-related policies		
lack of vision	clarify possible return of investments in heritage reuse		
leverage		cooperative business model owned by the local society	
limited housing	resident-oriented heritage reuse policy	long-term and short-term housing options	
limited services	more public services (schools, hospitals etc.)		
monitoring	creating cycles of policy framework and monitoring		
outdated	1- dynamic and inclusive policies; 2- zoning and limitations on interventions to heritage		
participatory governance	participatory regulation making		
PPP		business improvement district	
regulation	national law decree on collaborative processes	adopt policies for longer time commitment on public investments	strict environmental policies to regulate cruise ships and over-sized yachts
role of government	value-based approach by local authorities		
temporarity in business models	regulation of temporary use		
waste treatment			investing in new technologies for waste treatment; less plastic in cafes and more dust bins

Source: Authors

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Table 10 - Governance-related Solutions to Main Barriers of Adaptive Reuse

Barriers	Governance			
	Reaching consensus	Decision making	Partnership	Civic engagement
conflict	external mediator		local strategic partnership for cultural heritage, local products; third party bodies to negotiate shared strategies integrating heritage and socio-economic needs	
economic crisis	meeting all the needs of stakeholders			
human resources		capacity - dynamic staff		engaging young entrepreneurs
jargon/disciplinarily	creating a common jargon, enhancing interdisciplinary			
knowledge sharing				social gatherings
lack of attractiveness				working with local artists
lack of best practices	creation of a platform of good practices			
lack of collaboration		institutionalisation of regular meeting within the municipality	create a supervision for the third sector	
lack of collaboration - regional collaboration		closer cooperation between county board and the region; partnership at regional level	municipality activating networks of collaboration among bodies and associations; regions and municipalities supporting small municipalities	
lack of common interests				identify and involve contesting groups
lack of coordination, communication		horizontal (NGO, private sector) and vertical (authorities) connection		open dialogue; organising debates

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lack of engagement activities				innovative cultural activities to engage people
lack of funding			public/private relationship to heritage	
lack of incentives			common goals and collaboration among partners	promote citizen engagement with economic incentive
lack of interest				new activities to attract young people
lack of knowledge			cross-border knowledge transfer, EU as facilitator	
lack of participation	citizen engagement - inclusiveness			citizen engagement at all stages
lack of social cohesion				monthly meetings with active citizens
lack of stakeholder engagement			develop cross-sectoral networks; cooperation between entrepreneurs and public actors in the tourism sector; partnership between volunteer NGO and public parties	working groups
knowledge sharing		transparency and trust building		
lack of worthiness for preservation				participatory value assessment and creation
participatory governance				public consultations
regulation				use different planning and regulatory frameworks to engage and motivate communities to participate

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role of government			active leadership in government	
support for stakeholders		local authorities as active actors, not only coordinators		

Source: Authors

Table 11 - Education-related Solutions to Main Barriers of Adaptive Reuse

	Education	
Barriers	**Educational tools**	**Raising awareness**
attitude and mindset		shift of mindset on investing in circular economy
culture perception	storytelling and handicrafts	
energy efficiency		significance of cultural heritage and its potential for energy retrofitting
intangible dimension	craftsmen training courses	
lack of attractiveness	local history and storytelling	
lack of awareness	1- educational tools at schools on cultural heritage; innovative games	
lack of best practices	data sharing platforms for best practices	
lack of information	training - volunteering heritage programmes	significance of cultural heritage
lack of knowledge	tools of creativity for cultural heritage	
lack of planning		creating an informal network
lack of sense of belonging	education on local heritage	significance of cultural heritage
knowledge sharing	working with schools on knowledge transfer	
lack of vision		focus on sustainable development
lack of worthiness for preservation		significance of cultural heritage - storytelling
loss of knowledge	identify knowledge elements of cultural resources	

Source: Authors

The clustering of these solutions under the six categories of tools that will be defined in the following section (Section 6.3) has further supported the **formulation of a set of policy enablers to support the transition towards implementation of adaptive reuse strategies and policies**.

In conclusion, the outcomes of the solution cluster analysis derived from the suggestions and reflections of the stakeholders have contributed to the development of the following items:

1. A multi-level toolkit elaborated upon the one initially drawn from the HUL Recommendation and the HUL workshops (see Section 6.3)

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2. Enablers to facilitate the adoption of policy related tools and strategies of adaptive reuse (see Section 6.4).

The results drawn from the following two sections will then lead to the policy-related guidelines and strategies covered in Section 7. It becomes clear that **barriers, if tackled, can be turned into enablers for a transition to circular economy** models.

6.3 Building the multi-level toolkit

The Historic Urban Landscape Recommendation (UNESCO, 2011) provides **a set of six critical steps and a continually evolving toolkit that is classified under four categories of tools** to facilitate management of urban heritage and adoption of the HUL approach in various local contexts. It has been further underlined in the HUL Guidebook (Ballarat, 2016) that the HUL Toolkit provides an ever-expanding set of innovative and multi-disciplinary tools, policies and actions that have to be adapted for local application for the successful incorporation of urban heritage management into the wider goals of sustainable development.

The four key categories of tools have been defined as follows (UNESCO, 2011; Pereira Roders, 2019):

Table 12 - Definition of HUL Toolkit and related instruments

Key Categories of Tools	Definition	Examples of Tools
Knowledge and planning tools	They should help protect the integrity and authenticity of the attributes of urban heritage. They should permit the recognition of cultural significance and diversity, and provide for the monitoring and management of change to improve the quality of life and urban space. (UNESCO, 2011)	Mappings Heritage, social and environmental impact assessments
Regulatory systems	They should reflect local conditions and may include legislative and regulatory measures aimed at the conservation and management of the tangible and intangible attributes of urban heritage. (Pereira Roders, 2019)	Laws, legislations, regulations Policies and strategies Plans
Financial tools	They should aim to build capacity and support innovative income-generating development rooted in tradition. (UNESCO, 2011)	Global and governmental funds Micro-credit and incentives Public-private partnerships
Civic engagement tools	They should involve a diverse cross-section of stakeholders and empower them to identify key values in their urban areas, develop visions, set goals, and agree on actions to	Intercultural dialogue Public consultations Workshops

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	safeguard their heritage and promote sustainable development. (UNESCO, 2011)	

Source: Definitions gathered from the HUL Recommendation (UNESCO, 2011) and Pereira Roders, 2019. Examples of tools derived by Authors.

The findings derived from the analysis of barriers and solutions, conducted as part of this Deliverable, reveal that **the existing HUL toolkit is limited in context because its offer is limited to** four categories of tools and actions to facilitate the local adaptation process. They address the administrative, regulatory and financial aspects of the normative framework to a large extent, but **fail to provide effective solutions to overcome governance-related and environmental barriers, as well as socio-cultural problems**. As it has been emphasised in the HUL Recommendation that the toolkit provided is continually evolving (UNESCO, 2011), thus **a more elaborated toolkit with additional categories and tools are introduced** as part of this Deliverable.

The limitations and gaps in the existing HUL toolkit are summarised below:

- **Lack of a broader context for governance-related tools:** In terms of administrative and governance-related issues, the key tools provided by the HUL Toolkit have been **limited to community engagement tools**. In the barrier assessment, lack of collaboration, communication and cooperation, coupled with lack of partnership between a wide range of relevant stakeholders have been indicated as one of the major concerns, in addition to lack of public participation. Hence, **a broader context of governance-related tools** needs to be developed in order to tackle the broader context of administrative barriers.
- **Lack of environmental and resilience-building / risk-mitigation tools:** In parallel to the growing interest towards climate-heritage topics and climatic adaptation of cultural heritage, there is **a necessity to include environmental tools to build resilience, mitigate natural and human-induced risks, and support climatic adaptation of historic buildings, sites and landscapes**.
- **Lack of educational tools to raise awareness:** To address the social and cultural barriers associated with lack of awareness and interest towards adaptive reuse and cultural heritage, it is also important to include educational tools to raise awareness among a wide variety of interest groups ranging from private investors to local community groups and young population.

Building from these knowledge gaps and the solutions suggested by local stakeholders as part of the multiple-case study analysis**, an extended multi-level toolkit with examples of associated tools** to facilitate adaptive reuse policies and processes within the circular economy perspective is developed and presented as follows:

Table 13 - Multi-level toolkit for adaptive reuse and related instruments (new additions are presented in orange)

Key Categories of Tools	Sub-categories	Examples of Tools
Knowledge and planning tools	Mappings	Mappings – perception mapping
	Impact assessments	Heritage, social and environmental impact assessments – impact assessment for cultural heritage adaptive reuse

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	Mobility	Smart mobility plans Measurement tools for local accessibility
	Visitor management	Sustainable tourism management plans ICT-based destination plans and mapping Supporting tools for disabled people
Regulatory systems	Laws, legislations, regulations	Flexible land use regulations
	Policies and strategies	Governmental priorities for heritage-related strategies, bottom-up policy development
	Plans	Local action plans
Governance-related tools	Participatory decision-making tools	Policies for national clusters, Decision support system
	Consensus and partnership	Multi-stakeholder platforms, local strategic partnerships
	Citizen engagement tools	Public consultations, community workshops
Financial tools		Global and governmental funds – urban heritage development fund Micro-credit and incentives Public-private-people partnerships Business improvement districts crowdfunding
Environmental tools	Circular built environment	Circular environmental strategies Material passports
	Environmental and climatic adaptation	Environmental impact assessment Resilience building tools (seismic retrofitting, drainage systems etc) Local ambassadors for sustainability
	Risk management	Vulnerability assessment Risk mitigation plans
Educational tools	Education	Local history and storytelling Craftsmen training courses Educational programs at schools
	Raising awareness	Data sharing platforms for best practices

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		Heritage awareness campaigns

Source: Sub-categories and examples of tools derived by Authors.

A comprehensive and systematic assessment of the newly introduced multi-level toolkit and the associated circular tools to support adaptive reuse of cultural heritage will be presented in the next **Deliverable 1.6. Project Long Assessment**, to be submitted in July 2020.

6.4 Assessment of policy enablers for adaptive reuse

The findings of the stakeholder workshops can be compared with the findings of the CLIC Survey on Enablers and Tools of Adaptive Reuse conducted to **investigate the relative importance of certain strategies, tools and policies in relation to adaptive reuse of cultural heritage practices at different contexts**.

The Survey aims to investigate how local decision makers and stakeholders evaluate certain policy-related enablers to tackle the barriers encountered in adaptive reuse of cultural heritage at local, regional, national and European levels. This investigation consisted of an online questionnaire circulated among the pilot city partners of the CLIC project and the stakeholders participating in the CLIC project, for instance in the Heritage Innovation Partnerships (HIP). The present section reports upon the sample of 10 full responses.

The first part of the online questionnaire consisted of questions aiming at identifying the respondents. Based on the case study represented by them and the level of governance they participate in the decision making. Afterwards, the respondents were asked to express their opinion on the usefulness and feasibility of a set of policy-related enablers. These enablers were presented to respondents based on the level of governance they related to, namely European, national, and local. Respondents ranked the enabler usefulness and feasibility at their local level using a 5-points Likert scale ranging from 1 to 5, where 1 represented “least” or “strongly disagree” and 5 “most” or “strongly agree”.

Only the 10 questionnaires completed were analyzed. The 12 only partially filled in were discharged because the researchers could not infer whether they were additional responses. The answers were analyzed based on their distributions over the 5-points of the Likert scale. To provide an overview of the collected answers, results were summarized using the values of the mean and the standard deviation calculated per each question. For simplification, the enablers presenting mean values higher than 3,00 are considered as the one useful and/or feasible in the present report. To detail the overview of the assessment results, we classified the enablers based on the average ranking as slightly, moderately, or very useful or feasible (see Table 14). Enablers with a corresponding mean of 3.00 are considered as neutral enablers.

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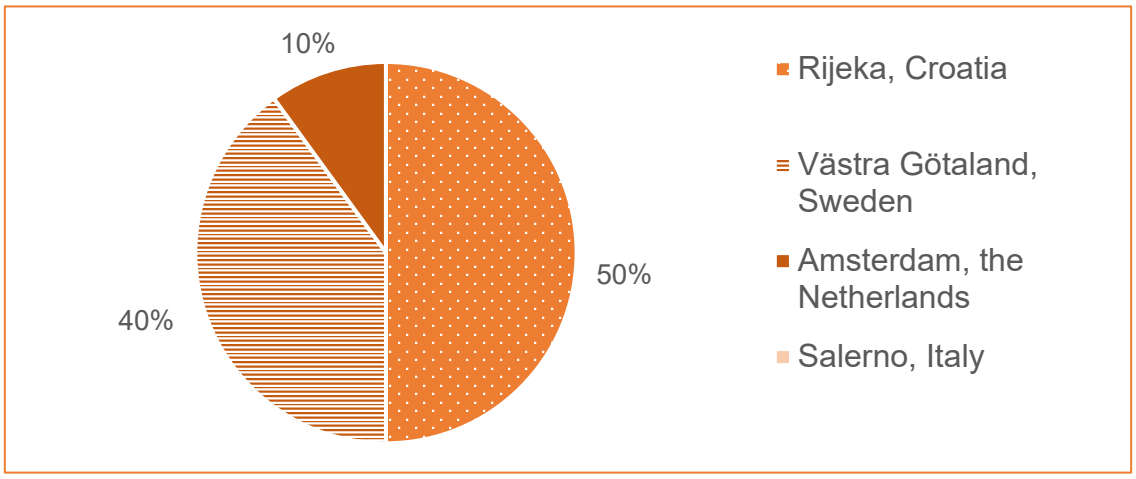
Table 14 - Classification of enablers presenting a mean value higher than 3.00

Class	Range
Slightly	3.00 < Mean ≤ 3.66
Moderately	3.66 < Mean ≤ 4.33
Very	4.33 < Mean ≤ 5.00

Source: Authors

Figure 20 shows the distribution of the respondents per case study and displays the levels of governance these respondents participate into in the decision making. Particularly, respondents could indicate more than one level of participation. The 3 answers belonging to the category "others" were detailed by respondents to indicate that they do not take part in decision making. Only one respondent, representing Västra Götaland case study, is involved at all levels of decision making, while the other respondents participate at the local or the regional level. Therefore, the majority of decision makers are at least involved in the decision making at the local level.

Figure 20- Distribution of the number of respondents per case study represented (N=10).



Source: Authors

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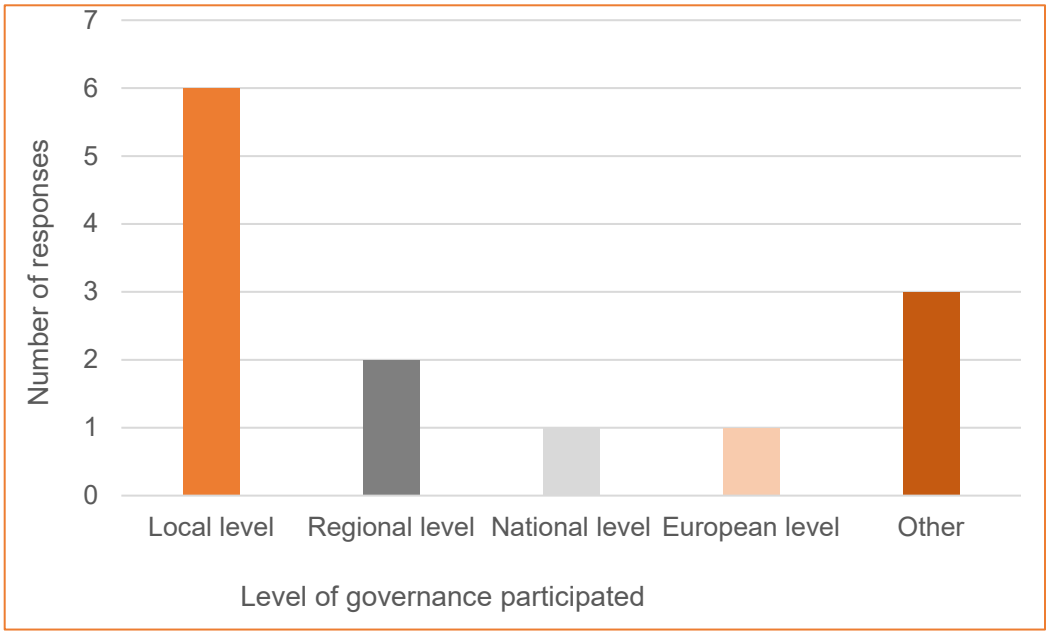
Figure 21 - Distribution of the number of respondents per level of governance participated in the decision-making (N=13).



Source: Authors

Table 15 - Summary of the ranking of the policy-related enabler shows the summary overview of the ranking per each set of enablers. The detailed answers to the questionnaire and rankings are reported in Annex 4. Overall, all assessed enablers are useful; in fact averaging the scores given, they score more than 3.00. Conversely, concerning feasibility all enablers but two scored more than 3,00. Assessing feasibility, the European enabler "Support coming from Development Banks" (mean=3.00, std.dev.=1.87) and national enabler "Governmental Circular Economy and Heritage priorities in developing smart specialization strategies" (mean=3.00, std.dev.=0.63) received a ranking that results in an average neutral assessment. However, these two enablers differs in the distribution of score received. On one hand, "Support coming from Development Banks" presents a more counter-posed assessment entailing more extreme values in the ranking, i.e. 1 or 5 (). The assessment of the feasibility of this European enabler is also the only one presenting a 50% of "I don't know" choices. On the other hand, the feasibility of "Governmental Circular Economy and Heritage priorities in developing smart specialization strategies" is more often ranked by the respondents with a neutral score, i.e. 3.00 ().

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Lv	Enabler	Usability						Feasibility				
		N	Perc.	Mean	SD	Deg		N	Perc.	Mean	SD	Deg
European enablers	The EU Action Plan for the Circular Economy	7	70%	4,0	0,8	M		6	60%	3,7	0,8	M
	The Pact of Amsterdam	7	70%	4,3	0,8	M		6	60%	3,8	1,2	M
	UNESCO Historic Urban Landscape	7	70%	4,0	1,4	M		7	70%	3,7	1,4	M
	EU Funding	9	90%	4,9	0,3	V		9	90%	4,7	0,7	V
	Support coming from Development Banks	6	60%	3,5	1,6	S		5	50%	3,0	1,9	N
	EU Directives	8	80%	4,0	0,9	M		8	80%	4,1	1,0	M
National enablers	Governmental Circular Economy and Heritage priorities in developing smart specialization strategies	7	70%	4,6	0,8	V		6	60%	3,0	0,6	N
	Policies in favor of key national clusters to foster cooperation and innovation	9	90%	4,2	0,7	M		8	80%	3,1	0,6	S
	Bottom-up approach to policy development that lead to greater citizen engagement	10	100%	4,8	0,4	V		9	90%	3,8	1,3	M
	National public funding and budget for cultural heritage projects and practices	10	100%	4,2	1,2	M		9	90%	3,4	1,5	S
	National subsidies and market-based incentives to support reuse of buildings and materials	10	100%	4,5	0,7	V		9	90%	3,6	1,3	S
Local Enablers	Multi-stakeholder platforms and citizen engagement	10	100%	4,7	0,5	V		9	90%	3,9	1,2	M
	Enhancement of policy communication and enforcement	9	90%	4,4	0,7	V		8	80%	3,9	1,1	M
	Scaling up public procurement for adaptive reuse	10	100%	4,7	0,7	V		9	90%	3,9	0,9	M
	Awareness raising campaign and education tools	10	100%	4,8	0,6	V		9	90%	4,0	1,0	M
	Dedicated support for the development of sustainable tourism and mobility plans	10	100%	4,6	0,7	V		9	90%	4,2	1,0	M
	Environmental impact assessments and risk mitigation plans	10	100%	4,7	0,5	V		9	90%	3,9	0,9	M
	Flexible land use regulations	10	100%	4,0	1,1	M		9	90%	3,3	0,9	S

Table 15 - Summary of the ranking of the policy-related enabler

Source: Authors

Note: The column “Deg” reports the degree of usefulness and feasibility: S stands for “slightly” M for “moderately”, V for “very”, and N for “neutral”.

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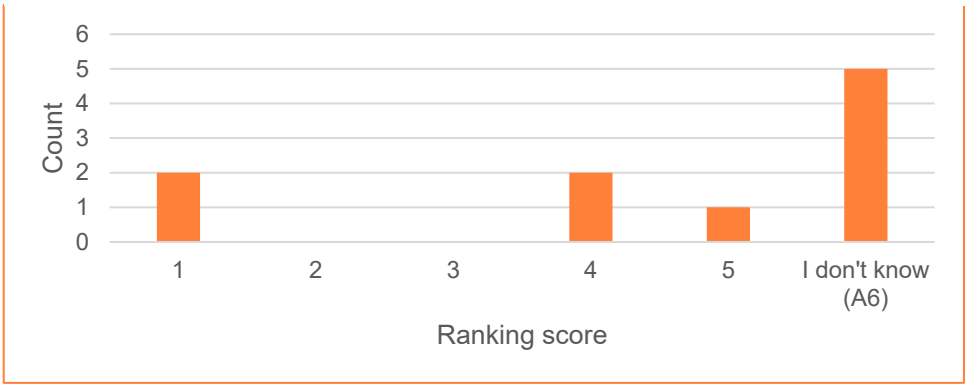
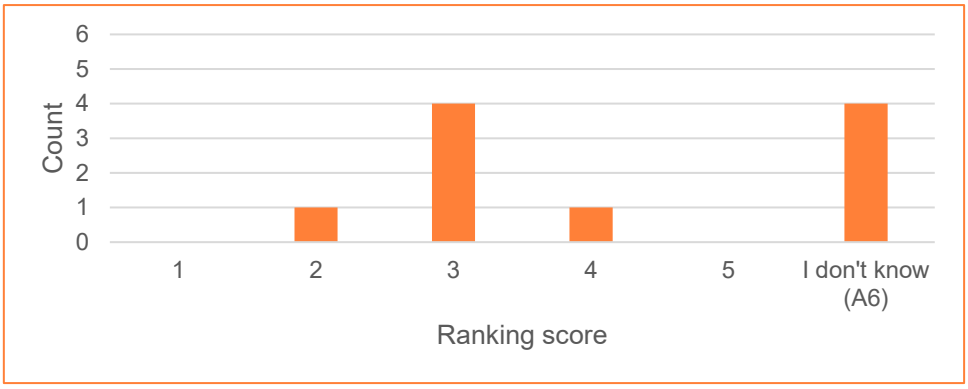
Figure 22 - Distribution of the ranking score for the feasibility assessment at local level of the European Enabler "Support coming from Development Banks" (N=10).



Source: Authors

Figure 23 - Distribution of the ranking score for the feasibility assessment at local level of the European Enabler "Governmental Circular Economy and Heritage priorities in developing smart specialization strategies" (N=10).



Source: Authors

Among the policy-related enablers proposed at the European level, "EU Funding" presents the highest mean value both for usefulness (mean=4,89, std.dev=0,33) and for feasibility (mean=4,67, std.dev=0,71). Therefore, this European enabler is the one mostly recognized as useful and feasible at local level according to respondents. Except for "Support coming from Development Banks", all other European enablers are moderately useful and feasible. To note that, besides emerging as a neutral enabler for feasibility, "Support coming from Development Banks" is also ranked as a slightly useful enabler.

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The enabler proposed at the national level that has the highest mean is “Bottom-up approach to policy development that lead to greater citizen engagement” for both the usefulness (mean=4.80, std.dev.=0.42) and the feasibility assessment (mean=3.78, std.dev.=1.30). Particularly this enabler is very useful and moderately feasible. Other very useful enablers proposed at national level are “Governmental Circular Economy and Heritage priorities in developing smart specialization strategies” and “National subsidies and market-based incentives to support reuse of buildings and materials”. Concerning feasibility, beside the bottom-up approach to policy development, the other national enablers were either slightly feasible or neutral.

The most useful enabler at the local level is “awareness raising campaign and education tools” (mean=4.80, std.dev.=0.63), whereas the most feasible local enablers is “dedicated support for the development of sustainable tourism and mobility plans” (mean=4.22 , std.dev.=0.97). All other enablers are very useful with the exception of “Flexible land use regulations” which is moderately useful. This last enabler also scores the lowest in feasibility and is classified as slightly feasible.

These results of the policy enablers assessment have contributed to the **formulation of policy-related guidelines to be adopted at EU, national and local scales** to support the adaptive reuse processes. These policy-related guidelines and strategies are further explained in Section 7.

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7 Results: Policy-related Guidelines and Strategies

The findings of the barriers, solutions and policy enabler assessments have largely contributed to the formulation of **policy-related guidelines that will help policy-makers to create an enabling environment for adaptive reuse of cultural heritage** in the transition towards circular economy. This Deliverable thus supports the identification and development of policies that will enable this transition, as policies play a significant role in directing the administrators and private sector towards transformation. In this context, the barriers, suggestions and policy enablers, at local, national and EU levels, can inform the transition from linear to circular models in terms of reuse practices of historic buildings, sites and landscapes.

7.1 EU policy level

The circular economy and cultural heritage have been a main focus of the central policy platforms of the **EU Horizon2020 strategy**. Following up the success of the **European Year of Cultural Heritage 2018**, the **European Framework for Action on Cultural Heritage** has been adopted to initiate heritage-related activities at European scale, primarily in EU policies and programmes. Within these contexts, it is important to incorporate the views and reflections of a variety of stakeholders dealing with adaptive reuse practices on policy enablers to support the transition from linear to circular processes.

At European Union policy level, stakeholders view the following strategies and tools as policy enablers of adaptive reuse. They have been listed in order of their usefulness and feasibility indexes derived from the enabler assessment presented in Section 6.4:

1. **EU Funding and Grants:** The EU provides funding to support research and innovation on heritage-related projects through programs such as Horizon2020. In addition, the European Regional Development Fund (ERDF), European Structural and Investment Funds and the Cohesion Fund (CF) can provide support in the transition towards circular models, and to promote economic and social cohesion across Europe.
2. **EU Directives**: Regulatory measures that support the circular economy agenda and the Heritage Framework also act as facilitators for relevant actions to be adopted at local contexts.
3. **UNESCO Historic Urban Landscape approach**: Adopted by UNESCO in 2011, the HUL Recommendation provides an interdisciplinary and continually evolving toolkit to support conservation through transformation approach.
4. **The EU Action Plan for the Circular Economy:** Adopted in 2015, this Action Plan aims to transform the economy of the EU and its Member States in favour of the circular economy.
5. **The Pact of Amsterdam (Urban Agenda for the EU):** In this EU Urban Agenda adopted in 2016, the role of social dimension and employment benefits of the adaptive reuse of cultural heritage are indicated.
6. **Support coming from Development Banks:** As another European financial resource, European Investment Bank and the European Bank for Reconstruction and Development may also provide financial support.

The assessment and ranking of these policy enablers at EU scale by local stakeholders allow the identification of essential **policy-related strategies to be adopted to ease and support the transition towards circular adaptive reuse models**. These key elements are summarised below:

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- **Tools, models and mechanisms to facilitate the implementation of EU funding instruments and programmes at local contexts**: One of the major barriers identified by the stakeholders have been lack of funding to support adaptive reuse policies and practices, and yet the EU funding has been evaluated as the primary policy enabler at EU level. Hence, it is essential to develop and disseminate circular economic tools, models and mechanisms (through innovation programmes etc.) that will support and facilitate the implementation process of these funding instruments and programmes at various local contexts.
- **Regulatory measures to enforce the EU frameworks across EU Member States:** It has been noted among stakeholders that there is a lack of harmonisation in terms of EU regulations and frameworks applied by EU Member States. Supported by the consensus on the usefulness and feasibility of EU Directives that will support the implementation of EU frameworks, in addition to UN New Urban Agenda, SDGs and the HUL approach, it is important to adopt certain regulatory measures, through EU Directives, that will enforce the application of such agendas and frameworks at national and local scales.
- **Enhancing coordination to ensure actions and strategies are interlinked:** In order to enhance coordination and harmonisation among EU Member States, joint programs, actions and services such as European Heritage Label needs to be ensured.

7.2 National policy scale

To design and implement successful circular and sustainable adaptive reuse strategies and policies at national scale, **a participatory and multi-level decision-making process is essential**. One of the major administrative barriers identified by stakeholders have been **lack of understanding and prioritisation of adaptive reuse strategies** in the transition towards circularity. Depending on the context or the country, national administrations have tended to suffer from one or more of the following barriers related to decision-making: lack of collaboration, lack of coordination and cooperation, conflict of interest and priorities, and lack of participation.

To cope with these administrative challenges, national government need to take strategic policy efforts to better support reuse strategies and practices at national policy scale. The following policy enablers assessed by the stakeholders in terms of usefulness and feasibility (and presented in sequence of highest mean to lowest) are fundamental to provide guidance towards circular policies and strategies:

1- **Bottom-up approach to policy development:** In order to enhance greater citizen engagement in policy development, it has been approved by stakeholders' reflections that bottom-up approaches that engage local communities and social groups more horizontally in the decision making processes is needed.

2- **National subsidies and market-based incentives**: To provide financial support for the reuse of existing buildings and materials, it has been agreed that national financial tools, such as subsidies, tax and other market-based incentives, are necessary to facilitate the process.

3- **National public funding and special budget**: As lack of funding (at multiple levels) have been identified as one of the major barriers to adaptive reuse, a specific budget from the national public funding can provide additional financial support at national level.

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4- **Policies in favour of key national clusters:** To foster cooperation and innovation between public and private bodies, agglomeration of certain economic entities can be promoted to support collaboration for cultural heritage adaptive reuse.

5- **Governmental circular economy and heritage priorities in developing smart specialization strategies:** Lack of partnerships and prioritisation of circular economy and heritage-related strategies have been some key concerns addressed by the local stakeholders. Hence, national smart specialization strategies aiming to support sustainable and circular adaptive reuse can be adopted through public-private and –people partnerships.

It is important to keep in mind that **when working toward global solutions, progress at a national level could facilitate international and/or European agreements and frameworks**. The actions, measures and policies adopted at national level can also set a positive standard and norm for other countries to follow, and enhance the implementation and regulation of global frameworks at the domestic level.

7.3 Local policy scale

Local authorities can support the transition of businesses, as well as spaces and urban/rural areas towards circularity in a variety of ways. From the local policy perspective, the most significant policy enablers assessed by the stakeholders in terms of usefulness and feasibility (and presented in sequence of highest mean to lowest) are provided below:

1. **Multi-stakeholder platforms and citizen engagement:** Establishing collaboration between governments, local administrators, private and public bodies, developers, local organizations and citizens are essential in reaching consensus to push local sustainability agendas forward. Active participation of citizens in the decision making for adaptive reuse also allows value to be maximized for all.
2. **Scaling up public procurement for adaptive reuse:** As public procurement decisions are predominantly based on economic concerns, often without considering the environmental costs, it is important to build and ensure a closer relationship between public procurement and circular models of adaptive reuse.
3. **Awareness raising campaign and education tools:** Awareness raising campaigns focusing on action-based initiatives, coupled with educational tools implemented in the education and training programs at schools are vital to raise awareness on significance of cultural heritage and sustainable development at local level.
4. **Dedicated support for the development of sustainable tourism and mobility plans:** Tourism-related concerns have been expressed by stakeholders as one of the most salient barriers. Hence, dedicated support from local administrative bodies for the development of sustainable tourism and mobility plans are important to enhance sustainable tourism development in the cities and regions.
5. **Environmental impact assessments and risk mitigation plans:** With rising impact of climate change and other natural and human-induced threats on cultural heritage, it is highly important to enforce the conduct of environmental impact assessment, and development and adoption of risk preparedness and mitigation plans at local, urban and national levels.
6. **Flexible land use regulations**
7. **Enhancement of policy communication and enforcement:** Lack of transparency and communication between policy makers and rest of stakeholders is an issue to be tackled with enhancement of policy communication for better implementation and promotion of reuse activities.

It is clear that for the design and implementation of transparent, participatory and sustainable adaptive reuse strategies**, multi-level decision making process** is required. This process can **enhance better communication, coordination and collective action** across multiple levels of government, non-governmental agencies, other public and private entities, and local communities. Such participatory decision-making also ensures a better understanding of a wide array of values, priorities, vulnerabilities and risk perceptions, in addition to providing support for sharing and co-production of knowledge.

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8 Conclusion

This Deliverable identifies key barriers for the implementation of adaptive reuse that need to be addressed from a multi-dimensional and multi-level governance approach by policy makers, administrators, developers and owners. It thus provides policy makers and key decision makers with the **underlying factors and barriers** that need to be considered when implementing an adaptive-reuse policy as part of their sustainability and circular economy strategy, and **equips them with relevant solutions and policy-related guidelines** to adopt.

The stakeholder exchanges conducted as part of the HUL workshops and the survey on policy enablers highlight that some barriers and policy enablers play a fundamental role to support cultural heritage adaptive reuse strategies and practices within the framework of transition towards circular economy. To tackle the governance-related challenges emerging from **lack of collaboration, communication and coordination between a wide range of related stakeholders**, including multi-level governmental bodies, public and private entities, non-governmental organizations, experts, users and citizens, policies and regulations that support **participatory and multi-level decision-making processes adopted at national and local levels** are essential. At EU policy scale, **European charters and frameworks**, such as the Faro Convention and the Pact of Amsterdam, also support and provide suggestions for bottom-up approaches and citizen engagement.

Lack of funding and supporting financial and investment tools has also been one of the main concerns raised by local stakeholders in all the pilot cities. To provide **financial support** for the reuse of existing buildings and materials, it has been agreed that national financial tools, such as **subsidies, tax and other market-based incentives**, are necessary to facilitate the process. In addition, it is essential to develop and disseminate **circular economic tools, models and mechanisms** (through innovation programmes etc.) that will support and facilitate the implementation process of **European and national funding instruments and programmes** at various local contexts.

Another fundamental note is that despite the increasing awareness among experts and citizens regarding the climate change impacts on natural, cultural and socio-economic systems, there is still need for a **comprehensive understanding of the impacts of climate change on cultural heritage** properties and landscapes. It is also important to **educate the policy makers, decision makers, developers, investors and the public** how the adaptive reuse of cultural heritage plays a significant role in the transition towards circularity as a vector for sustainable development. **Awareness raising tools and activities, coupled with right educational tools** are instrumental for this objective.

In this context, the CLIC Project has been dedicated and committed to assist the European Commission in its journey towards circularity and sustainable development.

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Acronyms

[HIP]	[Heritage Innovation Partnership]
[HUL]	[Historic Urban Landscape]
[PESTEL-CA]	[Politic, Economic, Social, Technological, Environmental, Legislative, Cultural, Administrative analysis]
[PPP]	[Public-Private Partnership]
[PPPP]	[Public-Private-People Partnership]
[SDGs]	[Sustainable Development Goals]
[WP]	[Work Packages]

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Annex 1

Table 16 - Categories and barrier examples of PESTEL-CA framework

Factor / category	Code	Barrier example
Po	Political	Lack of leadership in government due to the facilitating role
Ec	Economic	Lack of sustainable funds and investments
So	Social	Depopulation
Te	Technical / technological	Contractors have no knowledge / experience in the field of cultural heritage
En	Environmental	Too much asphalt creates extra heat and rain does not flow
Le	Legal / legislative / regulatory	Issues of confidentiality / accessibility to data
Cu	Cultural	Different languages and visions
Ad	Administrative	Bureaucracy

Source: Adapted by Authors from the given sources

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Annex 2

Table 17 – Barrier allocation based on PESTEL-CA framework in pilot cities

Amsterdam, The Netherlands															
category	code	total occurency	% total occurency	mapping	% mapping	consensus	% consensus	vulnerability	% vulnerability	integrate	% integrate	prioritize	% prioritize	partnership	% partnership
administrative	ad	50	30%	6	12%	10	20%	4	8%	9	18%	8	16%	13	26%
cultural	cu	20	12%	6	30%	7	35%	3	15%	1	5%	1	5%	2	10%
economic	ec	20	12%	2	10%	1	5%	6	30%	8	40%	2	10%	1	5%
environmental	en	7	4%	2	29%	0	0%	2	29%	3	43%	0	0%	0	0%
legal/regulatory	le	36	22%	1	3%	1	3%	5	14%	25	69%	3	8%	1	3%
political	po	4	2%	0	0%	0	0%	1	25%	2	50%	1	25%	0	0%
social	so	15	9%	5	33%	3	20%	4	27%	1	7%	2	13%	0	0%
technological	te	12	7%	7	58%	0	0%	1	8%	4	33%	0	0%	0	0%
total		164	100%	29		22		26		53		17		17	

Salerno, Italy															
category	code	total occurency	% total occurency	mapping	% mapping	consensus	% consensus	vulnerability	% vulnerability	integrate	% integrate	prioritize	% prioritize	partnership	% partnership
administrative	ad	142	40%	7	5%	17	12%	21	15%	23	16%	44	31%	30	21%
cultural	cu	29	8%	0	0%	3	10%	7	24%	6	21%	9	31%	4	14%
economic	ec	47	13%	0	0%	1	2%	17	36%	11	23%	13	28%	5	11%
environmental	en	19	5%	0	0%	0	0%	16	84%	1	5%	1	5%	1	5%
legal / regulatory	le	30	8%	1	3%	2	7%	3	10%	7	23%	12	40%	5	17%
political	po	24	7%	0	0%	3	13%	9	38%	1	4%	5	21%	6	25%
social	so	49	14%	3	6%	15	31%	9	18%	8	16%	12	24%	2	4%
technological	te	14	4%	3	21%	2	14%	2	14%	1	7%	2	14%	4	29%
total		354	100%	14		43		84		58		98		57	

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Rijeka, Croatia															
category	code	total occurency	% total occurency	mapping	% mapping	consensus	% consensus	vulnerability	% vulnerability	integrate	% integrate	prioritize	% prioritize	partnership	% partnership
administrative	ad	51	41%	9	18%	5	10%	5	10%	7	14%	15	29%	10	20%
cultural	cu	13	10%	3	23%	3	23%	5	38%	2	15%	0	0%	0	0%
economic	ec	11	9%	1	9%	1	9%	7	64%	0	0%	1	9%	1	9%
environmental	en	5	4%	0	0%	0	0%	4	80%	0	0%	0	0%	1	20%
legal/regulatory	le	15	12%	4	27%	2	13%	4	27%	1	7%	1	7%	3	20%
political	po	3	2%	0	0%	0	0%	0	0%	0	0%	2	67%	1	33%
social	so	20	16%	3	15%	7	35%	3	15%	3	15%	2	10%	2	10%
technological	te	6	5%	5	83%	1	17%	0	0%	0	0%	0	0%	0	0%
total		124	100%	25		19		28		13		21		18	

Västra Götaland, Sweden			
category	code	total occurrency	% total occurrency
administrative	ad	7	15%
cultural	cu	8	17%
economic	ec	13	28%
environmental	en	3	7%
legal/regulatory	le	6	13%
political	po	0	0%
social	so	8	17%
technological	te	1	2%
total		46	100%

Source: Adapted by Authors from the given sources

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Annex 3

Table 18 - Categories of barriers derived from the workshop and the literature: comparison between the two sources. Barriers are listed alphabetically.

Barriers	Workshop	Literature
Accessibility	+	-
Accountability \\ Transparency and accountability	+	+
Attitude and mindset	+	-
Balancing cultural significance and economic viability	-	+
Being outdated	+	-
Bureaucracy	+	-
Climate change, natural hazards, environmental challenges	+	-
Commercial risk and uncertainty	-	+
Community value of existing buildings	-	+
Complexity and technical difficulties	-	+
Conflict \\ conflict of priorities of different actors	+	+
Contamination - heavy vehicle traffic \\ Contamination and high remediation costs	+	+
Controversial heritage	+	-
Costs \\ i) High costs of energy retrofitting; ii) High maintenance costs; iii) contamination and high remediation costs	+/-	+
Culture perception \\ Culture perceptions	+	+
Data management	+	-
Decision-making \\ Lack of participatory processes in decision making	+/-	+
Degradation and decay	+	-
Demographic	+	-
Economic crisis	+	-
Energy efficiency \\ High costs of energy retrofitting	+/-	+
Flexibility of buildings to accommodate new use	-	+
Framework	+	-
Gentrification	+	-
Green area	+	-
Heritage status	+	-
Human resources \\ Human resources - lack of skilled tradesmen	+/-	+
Identity \\ Sense of place and identity	+/-	+
Illegality	+	-

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Implementation	+	-
Inability to estimate social viability	-	+
Inclusiveness \\ Social inclusiveness	+	+
Incomplete	+	-
Inertia of urban development criteria	-	+
Inflexibility	+	-
Intangible dimension \\ Intangible dimensions - difficulty of assessing intangible heritage values	+/-	+
Investment	+	-
Investment, lack of involvement - private sector	+	-
Jargon/disciplinarity	+	-
Knowledge sharing	+	-
Lack of attractiveness	+	-
Lack of attractiveness, lack of job - high skilled, investment	+	-
Lack of attractiveness, perception and understanding of adaptive reuse	+	-
Lack of awareness \\ Public awareness of adaptive reuse	+	+
Lack of best practices	+	-
Lack of capacity	+	-
Lack of collaboration	+	-
Lack of collaboration - regional collaboration, lack of attractiveness - lack of local and regional interest	+	-
Lack of common interests	+	-
Lack of continuity	+	-
Lack of cooperation, communication	+	-
Lack of cooperation/interdisciplinary	+	-
Lack of coordination, communication	+	-
Lack of cultural toolkit	+	-
Lack of data \\ Limitation of knowledge and data	+	+
Lack of engagement activities	+	-
Lack of funding	+	-
Lack of incentives \\ incentive schemes	+	+
Lack of information	+	-
Lack of integrated site management	+	-
Lack of integration	+	-
Lack of interest	+	-
Lack of involvement - limited community engagement \\ community involvement	+	+

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Lack of job opportunities	+	-
Lack of knowledge \\ Limitation of knowledge and data	+	+
Lack of legalist approach	+	-
Lack of material passport	+	-
Lack of participation \\ Lack of participatory processes in decision making	+/-	+
Lack of planning	+	-
Lack of sense of belonging	+	-
Lack of sense of belonging/ownership	+	-
Lack of social cohesion	+	-
Lack of stakeholder engagement	+	-
Lack of tools/instruments	+	-
Lack of transparency	+	-
Lack of trust	+	-
Lack of understanding	+	-
Lack of understanding, perception and understanding of adaptive reuse	+	-
Lack of vision	+	-
Lack of worthiness for preservation	+	-
Leverage	+	-
Limitations of waste treatment	+	-
Limited housing	+	-
Limited services \\ Lack of social services and transportation	+	+
Loss of knowledge	+	-
Mapping content	+	-
Market opportunity due to location and site	-	+
Material decay \\ Longevity of building materials (durability of external fabric and finishes etc.)	+	+
Meeting the needs of all relevant stakeholders	-	+
Mobility/transportation \\ Lack of social services and transportation	+	+
Monitoring	+	-
Natural and cultural assets	+	-
Networking	+	-
Outdated	+	-
Ownership	+	-
Ownership, lack of funding/incentives	+	-
Participatory governance	+	-

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Physical structure	+	-
Politics	+	-
Pollution	+	-
Potential for overgrowth	+	-
PPP	+	-
PPPP	+	-
Promotion	+	-
Regulation \\ i) Compliance with local building codes; ii) Building regulations / planning restrictions ; iii) Health and safety requirements; iv) High energy performance requirements	+/-	+
Regulation, bureaucracy	**+**	**-**
Role of government	+	-
Seasonality	+	-
Significance assessment and changing perceptions of heritage	-	+
Site management	+	-
Support for stakeholders	+	-
Supportive governmental policies and strategies	-	+
Temporarity in business models	+	-
Time	+	-
Too much engagement activities	+	-
Tourism \\ No sustainable tourism measures	+/-	+
Vacancy	+	-
Vacancy, material decay	+	-
Vulnerability	+	-
Waste	+	-
Waste of resources	+	-
Zoning	+	+

Note:

The table reports the identified (+), absent (-), and identified with lower details in the workshop (+/-) of the barriers listed.

The barrier indicated using a **bold** font are identified only in the multi-case study, the one indicated in *italic* only in literature, while the one in regular are common to both literature and the multi-case study.

In column “barrier”, the text before double backslashes reports the barriers as emerged in the HUL workshop, the text following the backslashes reports the barriers as identified in literature.

Source: Authors

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Annex 4

Table 19 - Survey questionnaire

Introduction:

Question	Type of question	Measure unit
2. Which one of the four CLIC case cities / regions do you represent?	Single choice	0: no 1: yes
3. At what level of governance do you participate in the decision making?	Multiple choice	0: no 1: yes

Part 1: Policy-related enablers to circularize adaptive reuse of cultural heritage

Question	Sub-question	Variable	Measure Unit
4. Do you consider the following enablers of circular adaptive reuse of cultural heritage at **European level** as useful and feasible at your local context (building, village, city, region etc)?	**The EU Action Plan for the Circular Economy** (Presented in 2015, its objective is to transform the economy of the European Union and its Member States in favour of circular economy	• Usability • Feasibility	Score: from 1(least) to 5 (most) & "I don't know"
	The Pact of Amsterdam (Urban Agenda for the EU) (the role of social / employment benefits of the adaptive reuse of cultural heritage)		
	UNESCO Historic Urban Landscape approach (conservation through transformation approach		
	EU Funding (Programmes such as Horizon2020 to provide funding to support innovation, as well as funds such as European Regional Development Fund and the Cohesion Fund to promote economic and social cohesion across the EU)		
	Support coming from Development Banks (such as European Investment Bank, European Bank for Reconstruction and Development)		
	EU Directives (i.e. on waste, packaging etc., to support the circular economy agenda)		
5. Do you consider the following enablers of circular adaptive reuse of cultural heritage at **national level** as useful and feasible at your local context (building, village, city, region etc)?	**Governmental Circular Economy and Heritage priorities in developing smart specialization strategies** (through partnerships between public-private and people, national smart specialization strategies aim at supporting sustainable and circular adaptive reuse)	• Usability • Feasibility	Score: from 1(least) to 5 (most) & "I don't know"
	Policies in favor of key national clusters to foster cooperation and innovation (promoting the agglomeration of economic entities collaborating towards cultural heritage reuse)		
	Bottom-up approach to policy development that lead to greater citizen engagement		
	National public funding and budget for cultural heritage projects and practices		
	National subsidies and market-based incentives to support reuse of buildings and materials		

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6. Do you consider the following enablers of circular adaptive reuse of cultural heritage at **local level** as useful and feasible at your local context (building, village, city, region etc)?	**Multi-stakeholder platforms and citizen engagement** (collaboration between governments, local administrators, private and public bodies, developers, local organizations and citizens)	• Usability • Feasibility	Score: from 1(least) to 5 (most) & "I don't know"
	Enhancement of policy communication and enforcement (to support transparency in collective schemes, as well in collecting knowledge and data)		
	Scaling up public procurement for adaptive reuse (closer relationship between public procurement and circular models of adaptive reuse)		
	Awareness raising campaign and education tools (focused on significance of cultural heritage and sustainable development)		
	Dedicated support for the development of sustainable tourism and mobility plans		
	Environmental impact assessments and risk mitigation plans (to tackle natural hazards, environmental and development threats)		
	Flexible land use regulations		

Part 2: Circular tools of adaptive reuse

Question	Sub-question	Variable	Measure Unit
7. Do you consider the following tools useful and feasible at your local context (building, village, city, region etc)?	**Call for ideas for adaptive reuse of cultural heritage** (Call for ideas to stimulate innovation in the adaptive reuse of cultural heritage. Project evaluation including criteria of circularity: economic self-sustainability, creation of multiactor partnerships, identification of possible investors / funding sources)	• Usability • Feasibility	Score: from 1(least) to 5 (most) & "I don't know"
	Decisions Support System (This tool supports the selection of compatible uses or projects for specific cultural sites by ranking alternative uses/projects according to a framework of criteria and indicators)		
8. Do you consider the following tools useful and feasible at your local context (building, village, city, region etc)?	**Adaptive reuse business canvas** (It is a template that helps to develop a new business model for adaptive reuse of cultural heritage or describing an existing one)	• Usability • Feasibility	Score: from 1(least) to 5 (most) & "I don't know"
	Environmental circular mapping (This tool provides a "snapshot" of the air quality, water quality, greenhouse gas emissions pre and post adaptive reuse and an overview of waste management facilities and options)		
	Impacts assessment framework for Cultural Heritage Adaptive Reuse (This tool provide evidence of the positive impacts of the investments in the adaptive reuse of cultural heritage)		
	Perception mapping (This tool is a cultural mapping methodology aimed to identify the relationship between the everyday maker and the historic built environment by positioning human preferences, reflections and daily interactions with the cultural capital interpreting them through		

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	the five senses: hearing, touching, seeing, tasting, and smelling)		
9. Do you consider the following tools useful and feasible at your local context (building, village, city, region etc)?	**Local strategic partnerships** (This tool can offer ways to facilitate cooperation in decision making processes. It involves the development of a protocol, or a Memorandum of Understanding, as a general framework for improving management of monuments and sites*) *Such a framework might include, among others, a definition of the parties and their roles, an identification and brief description of the property with its significance, range of values and vulnerabilities, and details of the nature of the agreement, including the management the approach adopted, the definition of works or other changes that can be undertaken, and the establishment of a review mechanism of implementation or performance of the agreement.	• Usability • Feasibility	Score: from 1(least) to 5 (most) & "I don't know"
	Network Analysis (Analysis of relations between organisations working directly or indirectly in the cultural heritage field in a given region or city)		
10. Do you consider the following tools useful and feasible at your local context (building, village, city, region etc)?	**Business Improvement Districts (BID)** (A key public/private partnerships, helping to revitalize neighbourhoods and catalyse economic development throughout the city. In a BID, property and commercial owners band together as a team to promote business development and improve an area's quality of life)	• Usability • Feasibility	Score: from 1(least) to 5 (most) & "I don't know"
	Crowdfunding (This tool allows to obtain needed funding by soliciting contributions from a large number of people especially from the online community)		
	Urban heritage development fund (A social impact fund enables regions and towns to co-invest with third parties and direct this funding coherently towards their cultural heritage priorities)		

Source: Authors

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Annex 5

RESULTS CLIC SURVEY ON ENABLERS AND TOOLS OF ADAPTIVE REUSE

European enablers:

Table 20 - Enablers

The EU Action Plan for the Circular Economy				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	0	0%
3	2	20%	3	30%
4	3	30%	2	20%
5 (most)	2	20%	1	10%
I don't know	3	30%	4	40%

The Pact of Amsterdam				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	1	10%
3	1	10%	1	10%
4	3	30%	2	20%
5 (most)	3	30%	2	20%
I don't know	3	30%	4	40%

UNESCO Historic Urban Landscape				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	1	10%	1	10%
2	0	0%	0	0%
3	0	0%	1	10%
4	3	30%	3	30%
5 (most)	3	30%	2	20%
I don't know	3	30%	3	30%

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EU Funding				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	0	0%
3	0	0%	1	10%
4	1	10%	1	10%
5 (most)	8	80%	7	70%
I don't know	1	10%	1	10%

Support coming from Development Banks				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	1	10%	2	20%
2	1	10%	0	0%
3	0	0%	0	0%
4	2	20%	2	20%
5 (most)	2	20%	1	10%
I don't know	4	40%	5	50%

EU Directives				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	0	0%
3	3	30%	3	30%
4	2	20%	1	10%
5 (most)	3	30%	4	40%
I don't know	2	20%	2	20%

National enablers:

Governmental Circular Economy and Heritage priorities in developing smart specialization strategies				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	1	10%
3	1	10%	4	40%
4	1	10%	1	10%
5 (most)	5	50%	0	0%
I don’t know	3	30%	4	40%

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Policies in favor of key national clusters to foster cooperation and innovation				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	1	10%
3	1	10%	5	50%
4	5	50%	2	20%
5 (most)	3	30%	0	0%
I don't know	1	10%	2	20%

Bottom-up approach to policy development that lead to greater citizen engagement				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	1	10%
2	0	0%	0	0%
3	0	0%	2	20%
4	2	20%	3	30%
5 (most)	8	80%	3	30%
I don't know	0	0%	1	10%

National public funding and budget for cultural heritage projects and practices				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	1	10%	2	20%
2	0	0%	0	0%
3	0	0%	1	10%
4	4	40%	4	40%
5 (most)	5	50%	2	20%
I don't know	0	0%	1	10%

National subsidies and market-based incentives to support reuse of buildings and materials				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	1	10%
2	0	0%	1	10%
3	1	10%	1	10%
4	3	30%	4	40%
5 (most)	6	60%	2	20%
I don't know	0	0%	1	10%

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Local enablers:

Multi-stakeholder platforms and citizen engagement				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	1	10%
3	0	0%	3	30%
4	3	30%	1	10%
5 (most)	7	70%	4	40%
I don't know	0	0%	1	10%

Enhancement of policy communication and enforcement				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	1	10%
3	1	10%	2	20%
4	3	30%	2	20%
5 (most)	5	50%	3	30%
I don't know	1	10%	2	20%

Scaling up public procurement for adaptive reuse				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	0	0%
3	1	10%	4	40%
4	1	10%	2	20%
5 (most)	8	80%	3	30%
I don't know	0	0%	1	10%

Awareness raising campaign and education tools				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	1	10%
3	1	10%	1	10%
4	0	0%	4	40%
5 (most)	9	90%	3	30%
I don't know	0	0%	1	10%

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Dedicated support for the development of sustainable tourism and mobility plans				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	0	0%
3	1	10%	3	30%
4	2	20%	1	10%
5 (most)	7	70%	5	50%
I don't know	0	0%	1	10%

Environmental impact assessments and risk mitigation plans				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	0	0%	1	10%
3	0	0%	1	10%
4	3	30%	5	50%
5 (most)	7	70%	2	20%
I don't know	0	0%	1	10%

Flexible land use regulations				
	Usability:		**Feasibility:**	
Answer	Count	Perc.	Count	Perc.
1 (least)	0	0%	0	0%
2	1	10%	1	10%
3	2	20%	5	50%
4	3	30%	2	20%
5 (most)	4	40%	1	10%
I don't know	0	0%	1	10%

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Annex 6

CLIC SURVEY ON ENABLERS AND TOOLS OF ADAPTIVE REUSE Informed consent form

The CLIC Project

The overarching goal of CLIC trans-disciplinary research project is to identify evaluation tools to test, implement, validate and share innovative "circular" financing, business and governance models for systemic adaptive reuse of cultural heritage and landscape, demonstrating the economic, social, environmental convenience, in terms of long lasting economic, cultural and environmental wealth.

The CLIC project identifies innovative financing, business and governance models able to promote and facilitate adaptive reuse of cultural heritage in European cities and cultural landscapes in the perspective of the circular economy. The project aims to attract new sustainable investments for the reuse of abandoned buildings and landscapes, aiming at generating positive social and environmental impacts and at increasing employment through joint public-private-social partnerships.

The CLIC project will be structured in research activities (data collection, analysis of best practices of abandoned cultural heritage/landscape regeneration, elaboration of models) and in an operational phase, including:

(1) stakeholders' engagement aimed at enhancing their active participation in cultural heritage adaptive reuse processes (meetings, thematic workshops, focus groups);

(2) testing of the proposed models of governance, financing and business.

CLIC represents an opportunity for the cities involved, in terms of improving the ability to manage cultural heritage, attracting investments, creating jobs and attracting / developing skills useful for the valorization and regeneration of cultural heritage/landscape. The CLIC project intends to provide local decision-makers with useful assessment tools to address the complex challenges of managing cultural and landscape assets to transform what is currently a cost to the community, into an opportunity for economic, social and environmental development and cultural promotion of the city.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 776758.

We invite you to read this consent form as we would appreciate to discuss and share your specific experiences and thoughts on the key topics of our project, about which you may talk to anybody you feel comfortable with. Please take some time to reflect on whether you would

like to participate or not. If there's anything you don't understand in this information sheet, feel free to ask any questions at any time.

Participant Selection

You are invited to contribute to this project due to your experience as a city representative, academic, representative of civil society, representative of private stakeholder, and **take part to a survey collection of facts and perceptions related to case studies**.

Voluntary Participation

Your participation in this research is entirely voluntary. You can choose either to participate or to decline the invitation.

Procedures

The information collected is confidential.

Risks

The survey might potentially include sensitive and personal issues (i.e. political opinions, cultural values). These kinds of personal data shall be processed fairly and lawfully, and shall not be further processed in any manner incompatible with the initial purpose. Moreover, you do not have to answer any question that might make you feel uncomfortable.

Reimbursement

There will be no reimbursement for your participation.

Confidentiality

All data collected through this survey will remain confidential. The data you provided will be stored only with regard to the answers provided and anonymity will be guaranteed. Nobody will be named at the analysis of data, although direct quotes from your comments are very likely to be used in reports. As with any research project there could be limits to confidentiality. However, this research does not deal with any sensitive subjects, so the likelihood of such experiences is very small.

Data storage

All data will be stored for five years, counting from the end of the project. These data can be made available to other scientific practitioners at request.

Sharing the Results

The project findings are expected to be published within public reports. The data for example will be used in policy notes, conferences and workshops and as communication material.

Who to Contact

If you have any questions about this project feel free to ask the *Organizer* at any time.

You can contact the project Scientific Coordinator: prof. Luigi Fusco Girard (l.fuscogirard@iriss.cnr.it; clic@iriss.cnr.it)

By signing this letter of consent, you acknowledge that you have been informed on the purpose and nature of the research and that the information you provide will remain anonymous.

I, the undersigned, confirm that (please tick box as appropriate):	**YES**	**NO**
I have read and understood the information about the CLIC Project, as provided in the Information Sheet		
I have been given the opportunity to ask questions about the projects and my participation		
I voluntarily agree to participate in the project		
I understand I can withdraw at any time without giving reasons and that I will not be penalised for withdrawing nor will I be questioned on why I have withdrawn		
The procedures regarding confidentiality have been clearly explained (e.g. use of names, anonymisation of data, etc.) to me		
The use of the data in sharing, archiving, dissemination and publications has been explained to me		
I consent to the data gathered being used for this study		
I agree to sign and date this informed consent form		

Participant:

Name:		
Age:		
I confirm I am 18 years of age or over	**YES**	**NO**

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Gender identity	FEMALE	MALE
Organization:		
Role:		
Date:		
Signature		

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