ROCK

D2.3
Guidelines for sustainable adaptive reuse for CH

TECHNICAL REFERENCES

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EXECUTIVE SUMMARY / ABSTRACT

Starting with the knowledge gained from activities in Work Package 1 (WP1), this deliverable aims to support the ROCK project implementation based on the circular urban system concept (D2.2). In this deliverable, sustainable adaptive reuse is described as a tool for urban regeneration in historic urban centres, which is not a pre-set project but considered as a long-term process. This process can be long-term and sustainable when it is based on circle of sustainability which has the pillars of economy, environment, social and culture.

The deliverable has two major target groups:
1. Consortium community: aiming to share the sustainable adaptive reuse approaches from ROCK cities, and the guidance to implement it within the ROCK context.
2. Broader audience beyond the consortium community: aiming to inform different stakeholders for ROCK approach of sustainable adaptive reuse.

For sustainable adaptive reuse, cultural heritage is considered at the centre of sustainable development reflecting cultural values and identity. Therefore, it can generate knowledge economy, environmental sustainability and social inclusion. Because in ROCK circular approach, that can be seen in D2.2, cultural heritage is maintained and improved with the addition of new components that develop on the old ones, while attracting new resources and partnerships.

This deliverable involves steps starting from understanding the context of cities, how each city can be a role model for another on specific aspects, and possible steps for implementing the adaptive reuse projects considering possible technologies within the ROCK project.

SCOPE

Deliverable 2.3 aims to support the ROCK project's adaptive reuse demonstrations by linking it and adapting to the conceptual framework of ROCK circular urban system concept (D2.2). In this deliverable, firstly sustainable adaptive reuse is described as a tool for urban regeneration in historic urban centres, by providing examples and key takeaways from ROCK cities' successful implementations. Secondly, it helps replicator cities to document the process of their adaptive reuse cases within a framework which allows guidance for them through the implementation process.

1. Introduction

ROCK (Regeneration and Optimisation of Cultural heritage in creative and Knowledge cities) is a €10 million project funded by the European Union's Horizon 2020 research and innovation programme. The objective of ROCK is to support the transformation of three historic city centres (in Bologna, Lisbon and Skopje) into creative and sustainable districts. These districts should be characterized by: clustered economies, lively creative industries, adequate financial wealth, presence of markets sensitive to new artistic expressions, and cultural institutions active in the promotion of cultural events. Adopting a multi-level collaborative and systemic approach that boosts the exploitation of cultural heritage as a powerful environmental catalyst for regeneration, sustainable development, and economic growth, ROCK will produce outputs related to three main domains of innovation: organizational, technological and social innovation. Seven role-model cities with renowned experience of heritage-led urban regeneration will support replicator cities: Athens, Cluj-Napoca, Eindhoven, Liverpool, Lyon, Turin and Vilnius. The replicability and effectiveness of the tools and policies developed in these cities will be tested in the three replicator cities, taking their specific historic context and local needs into account.

In this respect, adaptive reuse can be seen as a common tool that is used to upscale the cities while preserving their identity and values. This report firstly provides a basic definition of sustainable adaptive reuse in creative and knowledge cities. Then it will explain the lessons learnt and the expected impacts of implementing sustainable adaptive reuse in historic city centres based on the experiences of ROCK cities in their urban regeneration projects. Finally, drawing from the ROCK cities' experiences, this document will give an implementation approach for successful sustainable adaptive reuse.

The guidelines are prepared as a fusion of derived knowledge from:
- Mapping activities of case studies of role model and replicator cities (WP1 of ROCK Project)
- Work-shadowing visits in Eindhoven, Turin and Lyon (WP1 of ROCK Project)
- Mentoring visits in Bologna, Skopje and Lisbon with participants of role model cities (WP1 of ROCK Project)
- Preparation of Business Models (WP3 of ROCK)
- Kick-off meeting session on best case practices of EU Horizon 2020 Circular models Leveraging Investments in Cultural heritage adaptive reuse "CLIC" Project
- Literature review on scientific and non-scientific publications on sustainable adaptive reuse and creative-knowledge cities.

These guidelines can be used by the stakeholders and policy makers of ROCK cities as a guide for the process of urban regeneration implementation. It is aimed to help ROCK cities to formulate and sustain an integrated management plan. The guidelines do not aim to give a detailed technical guidance, but focuses on the process of implementation.

2. Sustainable adaptive reuse in creative and knowledge cities

Adaptive reuse is the act of giving a new use to an obsolete or misused container (building, infrastructure, place, area). In adaptive reuse approach, rather than continuing the container's existing use through upgrades or restoring it to a specific time period, the new use is defined and adapted to the container while preserving and respecting its value and significance. This approach involves maximum conservation and minimal transformation. Therefore it is suitable for applications on urban cultural heritage preservation.

Adaptive Reuse (AR) itself can be considered as **a sustainable option for urban cultural heritage** compared to demolishing and reconstructing it because AR promotes urban strengthening and encourages the revitalization efforts (Bullen and Love, 2011). It is beneficial for **local culture**, because the urban cultural heritage (building, infrastructure, place, area) is already a part of the urban landscape, is rooted into the city's identity, and offers identical spaces and structures. It offers new opportunities in terms of housing and commerce and attracts new investments, as **innovative activities** search for the flexibility of space and freedom of use offered. AR allows for the retention of the original building's embodied energy and therefore has a positive environmental impact. Reuse is better for the **environment** as the building(s), their infrastructure and the land already exist and therefore there is no need to spend energy and resources that is required to construct new buildings. Finally, reuse strengthens a **community feeling** by positively linking a city's past to its future, and offering robust infrastructure to the needs of citizens.
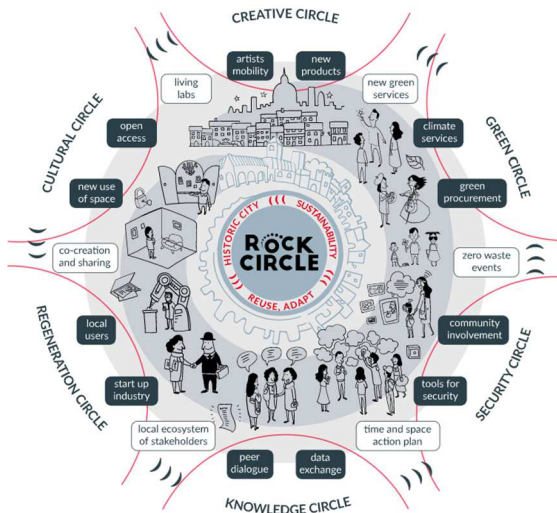

Figure 1. ROCK Circular Model

Sustainable Adaptive Reuse (SAR) is a **process** that brings the adaptive reuse approach and the sustainability elements of economy, environment, community, and culture together for regeneration of urban historical areas. This approach moves the urban regeneration from being a pre-set project to a long-term process that is alterable and updatable to changing situations, so that the urban regeneration can be maintained and endured in the long-term. Therefore, this process should be seen in a **circular system** in which the city also feeds this urban regeneration with **knowledge** and **creativity**. Because creativity and knowledge are devices to trigger and fuel the economic and social growth of the city and its vision, transforming it, with creation and use of **technological, organizational and social innovations**, in order to form sustainable urban models. Figure 1 shows the ROCK circular model: when creative industries and knowledge workforce are combined with culture, they can feed the sustainable social, economic, cultural and environmental growth of a city.

3. Lessons Learnt on Sustainable Adaptive Reuse from ROCK Cities

All cities evolve following their own unique 'historical development pathways'. These pathways are different in each city due to its physical, economic and social structures, etc., but are key in shaping the capacity of cities to regenerate themselves within the 'creative-knowledge' economy (Hall, 2004). The built environment and physical characteristics of European cities reflect centuries of development. Public, private and third sector organizations and institutions also often have their roots in past development. These inheritances from the past may be obstacles to change or may be resources for future development. In either case, they are the starting point for understanding the distinctive attributes of any city. Already developed physical, economic and social contexts create the historic position of cities and this has a contingent impact on future developments (Martin and Sunley, 2006). Therefore, culture, values and heritage are significant in the development and sustainability of creative and knowledge cities, because there is a strong link between culture, cultural heritage and creative-knowledge industries.

According to ROCK cities, a regeneration policy that worked somewhere else may not work in another place immediately, because each city has its own development path: **"One size doesn't fit all"**. Therefore, when cities start with their implementation strategies, they should consider the local contexts as the most important factors. These local contexts should relate to economic organization for business and the development of the labour market and also to the societal organisation that includes the historical, cultural, demographic, political and geopolitical dimensions, as well as innovation, technological and creative policies (Musterd and Gritsai, 2012). Although cities have different evolvements, they are all affected by common trends and face similar challenges in the global marketplace for jobs, talent and investment. As a result, they should learn from other cities but try to apply their knowledge at local context.

Before setting goals and actions for implementation, ROCK cities should keep the following recommendations in mind:

Incorporate local values and strengths on the specific characteristics of places and their people **to maximize local innovation** and **to better protect and conserve cultural heritage**.

Be realistic about the potential of a city's capacity to attract creative and knowledge-intensive industries and try to **build on what's there**.

Take into account that success may vary from place to place because cities have their own pathways: Cities with a strong heritage and attractive built environment may be easily marketed to visitors and enable place-making such as Lyon and Athens. Certain places may have an existing association with a creative-industry product or are known for their strong cultural infrastructure/creative scene such as Eindhoven and Turin. This can be exploited to nurture confidence in the indigenous businesses and open up new markets through branding and place-making.

Develop a vision: City should have an overall common vision based on the local context and any action should correspond for this vision.

Set priorities and take small actions: Define clear and measurable objectives that are built on a general vision. Prioritize the most important and SMART (specific, measurable, achievable, realistic, time-bound) ones and start applying actions in small scale to see the impacts. If the impacts are at the desired level, then

grow the implementation scale. Therefore, **the actions should be monitored and assessed** at different stages.

Consider that Adaptive Reuse and Temporary Use of places and spaces can be used as a tool for sustainable development and regeneration, as experimented in Cluj-Napoca, Athens and Eindhoven.

Identify enablers and restrictors for achieving targets: Enablers can be key actors, stakeholders, information and communication technology (ICT) tools and innovative entrepreneurs that can enable the city to achieve its targets. Restrictors can be physical, social and economic conditions of the urban regeneration area. Cities should also acknowledge that enablers have needs for the implementation and these needs should be considered and provided for a successful implementation.

Integrate set of actions to achieve cost-effective solutions and larger impacts.

Make realistic planning for actions considering time, money and human resources and **have interdisciplinary planning teams** for increasing the collaborative planning culture across different areas to enrich the input and connectedness.

Inform and engage citizens at different stages of the implementation process to raise awareness and create engagement and understanding for cultural heritage on many levels. It can be from the start, as in Eindhoven NRE-area example, or at a later stage. The important aspect to consider is what is expected from citizen's engagement in the process.

Take note of the lessons from the past: In the near future, current economic activities may disappear and new economic activities may appear with new physical and spatial demands. This may involve (re)developing buildings and locations that can easily be adapted in the future for a sustainable city. See for instance Athens' redevelopment of the Kypseli Market.

Make local, national and international networks: Networks are important factors in attracting and retaining different types of people for creating multi-cultural environments that can be fostered and facilitated in creative and knowledge industries. Networks also increase the overall knowledge and learning from others by creating synergies. This also puts significance on physical and non-physical attractiveness and accessibility.

These suggestions indicate that ROCK Cities should understand their current local status within the local, national and international context, set rational and transparent goals, elaborate their plan and perform their plan for a successful implementation.

4. Characteristics of Sustainable Adaptive Reuse Practices in ROCK Cities

Successful implementations are the result of a structured process that consists of status analysis (SWOTs), vision building, objective and target setting, policy and measure selection, finding right stakeholders and tools for specific targets, active communication, monitoring and evaluation and the identification of lessons learnt.

It is seen that the successful implementations focus predominantly on the identity and culture of the city by preserving urban cultural heritage and giving it new and flexible uses. These actions generate new

economies, new social structures, new environmental activities and a new cultural understanding which are all interdependent. The factors of SAR that are reported by the cities with successful implementations are:

- Winning public support via social inclusion and dissemination activities
- Creating vibrant areas out of obsolete spaces focusing on mixed uses
- Creating new accommodation opportunities in terms of housing or business
- Generating economic benefits from new businesses
- Contributing to a better environment by reducing pollution and energy consumption
- Making cultural heritage accessible (physically and non-physically)
- Enabling quick and better response and collaboration between stakeholders and actors
- Fostering new governance and financial structures
- Restoring the significance of original cultural heritage in the community, ensuring its survival
- Financial savings from retention of the original cultural heritage

Building on existing practices and regulatory frameworks, the basic tools of the case practices are:

- Long-term vision and clear implementation plan;
- Participatory approach;
- Balanced and integrated regeneration of CH in determined areas;
- Integration of stakeholders at different levels;
- Usage of innovative technological, societal and organizational approaches as enablers
- Assessment of current and future performance;
- Regular monitoring, review and reporting;
- Sustainable financial structures

5. Impacts of Sustainable Adaptive Reuse Practices in ROCK Cities

ROCK case practices report several changes and impacts after the implementations. These impacts can be grouped under the themes of innovation economy, environmental sustainability, social inclusion and culture for creative and knowledge cities as can be seen in Figure 2. One action can be anticipated to have several impacts as most of these themes are interdependent. Before ROCK Cities take any action, they should envision that these actions have impacts in the cities.

In this section, firstly observed impacts per theme are explained and specific impacts are defined based on the case studies from the ROCK cities. For an observed impact, ROCK Cities can contact the corresponding case city to have more insights on the implementation, especially in terms of defining the enablers, restrictors and measurable indicators. The case studies and their local contexts are/will be discussed in detail in the booklet series by Eurocities. These booklets are/will be available on ROCK Project website.
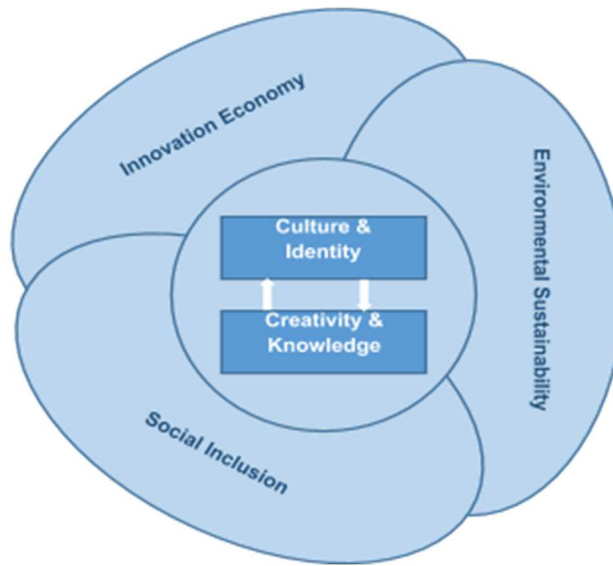
Figure 2. Culture & identity driven sustainability in creative and knowledge cities

5.1. Innovation Economy

Successful urban regeneration and adaptive reuse should maintain the economic viability of the heritage place while achieving economic efficiency (Yung & Chan, 2012). A way to achieve this is to integrate the innovation economy in which the capital is used to invest in research and development, better products and services, and to introduce new ones. So that technology, knowledge, entrepreneurship and innovation are highly significant in economic growth (Davenport et al., 2007). Instead of focusing on developing and distributing valuable commodities from scarce resources, it is important **to increase the quality of life for all and expand the wealth by developing new business models, products services and forms of production based on the local values and resources**.

Table 1. Observed Impacts of Innovation Economy from Case Practices

Observed Impacts	Case Practice	ROCK Circle
Creation of knowledge intensive companies and institutions for innovation in industries, clusters, districts of a city	**Vilnius, LT**: Vilnius Tech Park, a technology hub for start-ups and tech businesses in a former baroque palace and park. The place intends to be a connecting point between technology, businesses and creative industries, as well as a cultural place for inhabitants and visitors.	**Regeneration Creative Culture**

	Eindhoven, NL: Strijp-S is the former Philips factory (industrial heritage) that has been regenerated and transformed into a cultural and creative quarter with creative industry start-ups, and is now recognised as a smart district using smart technologies as enabler for higher quality of life.	**Regeneration Creative Culture**
Using resources effectively (via cost-benefit analyses, use of funds, products rented or shared when possible)	**Liverpool, UK**: ten years after being European Capital of Culture, Liverpool is conducting an analysis of impacts brought by the title and its aftermath. Liverpool estimated a return of £750m on a £170m spend when it received the title.	**Regeneration Creative**
Better marketing of values and local products	**Lyon, FR**: The local city branding agency 'Only Lyon' brings together 28 public and private partners since 2007. All mobilised in order to strengthen the reputation and competitiveness of Lyon in a context of growing competition between world cities in attracting talent, projects and tourists.	**Regeneration Creative**
Sustainable financial mechanisms and governance models	**Eindhoven, NL**: The city of Eindhoven acquired Strijp-S from the former owner, Philips. The city created an alliance with Volker Wessels, one of the biggest construction and property companies in the Netherlands. Together they founded Park Strijp Beheer in a public/private partnership. Trudo and Woonbedrijf (two housing companies) and Spoorzone BV later became partners in the development of Strijp-S. The "Board of Inspiration", the board for all stakeholders of Strijp-S, is the main platform where strategies are discussed and major decisions made. The city of Eindhoven created a project team, consisting of a general manager, financial, real estate and legal experts, a project manager for cultural development and a communication manager.	**Regeneration Cultural**
	Vilnius, LT: The plan for the regeneration of city centre is a long-term programme started in 1995 with the support of the World Bank; its main objectives are: physical renewal, community involvement, promotion of craftsmanship, cooperation between private and public sector.	**Regeneration Creative**

5.2. Environmental Sustainability

Environmental sustainability is the ability **to maintain the qualities that are valued in the physical environment by using the resources efficiently** while protecting them and ensuring that the human waste is not exceeding the limits to harm humans and environment (Goodland, 1995; Sutton, 2004). In that sense, the importance of green adaptive reuse for the built environment, by embedding environmental design and technologies into existing buildings/areas, is increasingly emphasized (Getty Conservation Institute, 2011). The building/area should have adequate infrastructure which minimizes negative environmental impacts, while maintaining the existing urban pattern of the area. Therefore, innovative thinking for resource management, monitoring the hazardous elements and energy consumption, and making transition to safe and low carbon cities are essential.

Table 2. Observed Impacts of Environmental Sustainability from Case Practices

Observed Impacts	Case Practice	ROCK Circle
Reducing Energy Consumption-Energy Efficiency	**Cluj-Napoca, RO**: Refurbishment of the historic monument of the Central Park Simion Barnutiu and the Casino building: restoration and modernisation of a symbol of Cluj architecture, taking into account energy efficiency and architectural lighting system, integration in urban planning with the rehabilitation of the park at the same time. Financed by European funds. Dedicated to cultural events.	**Green Cultural**
	Eindhoven, NL: On the Strijp-S redevelopment area, sensors and apps for office users are implemented in order to monitor and reduce the energy consumption by curtailment behaviour.	**Green**
Protection of the environment (less air and noise pollution)	**Bologna, IT**: GAIA Project: a European-funded project (linked to regeneration project of areas) to contribute to the reduction of greenhouse gas emissions at the local level through the creation of a partnership between the municipality and private companies to plant trees throughout the municipal area. The realization of this partnership made possible the implementation of an innovative system of environmental governance linking companies and Municipality to improve the quality of the urban environment.	**Green Regeneration**

	Eindhoven, NL: Static and mobile sensors in the city of Eindhoven measure and monitor the air and noise pollution. The collected data is published online in the open data platform. Based on the results, the traffic routes are changed accordingly in order to reduce pollution in the city center.	**Green Knowledge**
Waste reduction	**Eindhoven, NL**: Sanergy Project in Strijp-S is aimed to clean the contaminated ground occurred from the factories of Philips. Philips used the area as a testbed and developed a methodology to clean the contaminated ground while the cleaning process generates heating and cooling for buildings.	**Green Knowledge**
Reduced land consumption	**Eindhoven, NL**: Regeneration of Philips factory buildings, Strijp-S, NL: Masterplan Strijp-S 2002 is the strategy to redevelop Strijp-S as a creative and cultural area of Eindhoven and to promote its (inter)national reputation, and rediscovery as industrial heritage. The Masterplan was aimed to keep as many buildings as possible in the area and it is later updated (Vision Art & Technology 2014) to cover the entire spectrum of art and technology ranging from research and development, to cultural production and display. Due to the increasing businesses and knowledge migrants, Eindhoven is in need of spaces to accommodate residential and office areas. Redevelopment of the area reduces the land consumption around the city.	**Green Regeneration**
Green accessibility and sustainable mobility	**Eindhoven, NL**: Mobility S, on the Strijp-S area to foster a different approach to mobility. Mobility-S's objective is to move from simply delivering the number of parking spaces based on existing normative numbers, to a more detailed assessment of the needs for parking spaces, using the Living Lab approach to define these needs and test different solutions via peer dialogue and tenders. Start-ups within the area usually join the tenders and develop new solutions.	**Green Knowledge Regeneration**

5.3. Social Inclusion

The core of social inclusion is identified as **social equity, the sustainability of community and community participation** (Dempsey et al., 2011). The sustainable adaptive reuse of the CH should ensure the continuity of social life through reinforcing cultural values and cultural diversity by making CH and its people more

accessible (physically and non-physically) and therefore making the city more liveable. Community participation in adaptive reuse projects increases the satisfaction of citizens as their needs and wishes are taken into account (James, 2016). Moreover, this improves the decision making as the conflicts between interest groups are discussed before the project.

Table 3. Observed Impacts of Social Inclusion from Case Practices

Observed Impacts	Case Practice	ROCK Circle
Increasing accessibility to CH, facilities and services	**Turin, IT**: Torino Atlas: led by Torino Urban Centre, the Atlas aims to map and tell the metropolitan territory through the systemisation of maps, cartographic representations, statistical data and infographics. The Atlas is accessible to all to better grasp and understand the changes and dynamics of the territory.	**Knowledge**
Administration services to the citizens: New data structures	**Athens, GR**: SynAthina platform: the SynAthina platform is developing a systematic mechanism to collect and facilitate the available capacity of public spirited citizens to lead to simpler, faster and more sustainable solutions for the city of Athens	**Knowledge**
	Lyon, FR: Heritage Observatory: As a UNESCO World Heritage site since 1998, Lyon wants to analyse the changes that have happened in its city centre in terms of housing, living and commerce, together with the inhabitants directly impacted by the changes. The Observatory proposes a participatory approach to make sure all related stakeholders are part of the process and the analysis of the findings. The Heritage Observatory is developing tools to observe and decide on the implementation of sectorial urban planning policy and actions.	**Knowledge**
Giving social responsibility to local communities	**Athens, GR**: Kypseli Market: Built in the 1930s, the Kypseli municipal market was used until the 1990s, when the stalls were gradually closed down and squatted by residents who used the space for educational and cultural activities. In 2016, the municipality consulted the neighbourhood to find a more permanent purpose for the building. Impact Hub Athens won the consultation and will turn the market into a participatory, learning and cultural hub.	**Knowledge Cultural Creative**

	Turin, IT: Casa del Quartiere (Neighbourhood Houses): multi-functional community hubs located in different neighbourhoods of the city, involving associations, citizens, artistic and cultural operators. They are refurbished public spaces thanks to the collaboration between public institutions, private foundations and associations.	**Knowledge Cultural Creative**
	Eindhoven, NL: NRE-area: On a former gas supply field owned by the city, Eindhoven is collaborating with future residents and end-users to define the future space and decide on the redevelopment of the site. The ambition is to grow this area into a city-community that will feel committed to taking care of their 'own' environment. The city acts as an enabler and leaves decision-making to citizens.	**Knowledge Cultural Creative**
Supporting local communities for their productivity	**Athens, GR**: Traces of Commerce: Traces of Commerce developed a methodology for revitalising a specific vacant and abandoned space (unused shop gallery) for the benefit of the community; generated a dialogue towards more inclusive and participatory models of governance together with the municipality. The collaboration between different stakeholders can engage people to participate in creative activities, re-brand the city centre, boost the local economy, and eventually lead to new policies that address the current needs of the city and inhabitants.	**Knowledge Cultural Creative**
Participatory and direct democracy	**Cluj-Napoca, RO**: Participatory budgeting is a process carried out by the Cluj-Napoca City Hall, through which the ideas and initiatives of the Cluj community manifest and turn into reality. It is an open, inclusive and transparent process through which community members are directly involved in making decisions about spending priorities in the local budget. Participatory budgeting is a process that aims to improve the quality of life in the city by encouraging citizens to get involved in defining priorities and investment objectives from the local budget.	**Knowledge**

Affordable places in CH areas to local citizens	**Bologna, IT**: IncrediBOL: The city of Bologna allocates small grants and gratuitous loans to cultural entities and creative professionals in vacant heritage buildings owned by the municipality. Laureates also benefit from tailor-made services and guidance. The IncrediBOL scheme is supporting the development of new creative and cultural environment in the city and retain talents in the region.	**Knowledge Cultural Creative**
Increasing awareness of locals on CH in terms of environmental, cultural, economic and social values	**Turin, IT**: Urban Centre Metropolitano is an independent association set up to help guide the transformation of Torino and its surrounding metropolitan area. It is a tool of communication, research and promotion, as well as a place for debate and information for local residents, experts in the field and local businesses.	**Knowledge Cultural**
	Vilnius, LT: Vilnius Old Town Renewal Agency, an education and information centre for citizens regarding cultural heritage.	**Knowledge Cultural**
Increasing Safety and Security	**Eindhoven, NL**: The noise sensors implemented in the Strijp-S area monitor the sound and when there is danger, they alert the local neighbourhood watch and the police for the security of the area. Crowd detection sensors in Stratumseind, Eindhoven detect danger based on grouping of people and changing body temperature. The system then changes street lighting to prevent crime.	**Knowledge Security**

5.4. Culture & Identity

Culture and cultural identity can be powerful drivers for sustainable development. Culture is not only about the physical cultural heritage but also about cultural identity of communities which has influence on lifestyles, individual behaviour, consumption patterns, environmental values (Hosagrahar, 2012). Thus, cultural heritage and, creative and knowledge industries based on culture and identity, sustainable cultural tourism, and cultural infrastructure can serve as strategic tools for this purpose.

Table 4. Observed Impacts of Culture and Identity from Case Practices

Observed Impacts	Case Practice	ROCK Circle
Creation/conservation of cultural identity	**Bologna, IT**: Regulation on collaboration between citizens and the city for the care and regeneration of urban commons: the city as commons and citizens as sources of energy, ideas, talents and resources – fruitful collaboration to build the city with citizens and not just for them; signature of Collaboration Pact for the care and regeneration of urban commons (public spaces, urban green area, abandoned buildings or areas), the Pacts define the scope of interventions; an online portal has been created to submit collaboration proposals. Citizens define what matters to them and what part of the common identity of the city is.	**Culture Knowledge Regeneration**
	Lisbon, PT: Lojas com historia: The programme supports and promotes local traditional trade by awarding them a label and helping them with municipal funding for maintenance work, marketing and modernisation. In 2017, 82 shops were part of the programme. Through this programme, trade is recognised as a distinctive element of the city's identity. The programme highlights shops whose historical and cultural heritage contribute to the city's identity and protects them from property speculation and increase of rents.	**Culture Creative Knowledge**
Integration of cultural heritage to city	**Lyon, FR**: governance model for the implementation of the management plan of the World Heritage site (Lyon old town): the Local Property Commission is the steering, transversal body. It brings together state services, elected representatives from the city and Lyon Metropole, and qualified individuals. The commission is the entity where discussion and coordination between various participants take place. It has the role of supervising proper conservation of the property, examining any project that might affect its Outstanding Universal Value (OUV) and coordinating work related to writing or updating the management plan. A technical committee is assisting the commission with preparatory works.	**Culture Knowledge**

Maintenance and preservation of cultural heritage (restoration and adaptive reuse)	**Turin, IT**: Officine Grandi Riparazioni (private initiative): OGR is a former 20,000 sqm plant for train restoration turned into a venue for contemporary exhibitions and recently into a permanent cultural centre. The CRT Foundation invested €19 million for the restoration of the venue; the City of Turin has been consulted prior to the purchase by CRT and is now acting in partnership with the foundation to establish the content of the space.	**Regeneration Culture Knowledge**
	Bologna, IT: The city council will transform and restore the Cinema Modernissimo in partnership with Cineteca, an NGO dealing with conservation, restoration and enhancement of the cinematic heritage.	**Regeneration Culture Knowledge**
Enhancing attractiveness of cultural heritage	**Bologna, IT**: transformation of piazza Scaravilli, a former parking space, into a green and open (but temporary) public space for students of the Zamboni area. The transformation was conducted via a participatory process, calling for students' input and creative ideas. Despite protests from teachers who want to use the space for parking again, the initiative will continue.	**Cultural Green**
Organizing creative, cultural arts and events	**Eindhoven, NL and Lyon, FR**: use of cultural events such as Dutch Design Week, Glow Light Festival, Lyon light Festival to present the local cultural identity and cultural heritage. The heritage of the two cities is embedded in the genesis of these cultural events. Both cities exploit their local resources in terms of artists, spaces, local institutions and citizens during the preparation of the events.	**Cultural Creative Regeneration**

6. The Process for Successful Sustainable Adaptive Reuse Implementation

This section explains how to approach to a sustainable adaptive reuse case by integrating the Rock knowledge and technologies. More detailed implementation plan will be given in D2.5.

6.1. Analysing the Status

Find potential historic places for adaptive reuse: Use existing mapping tools (digital or non-digital) to keep track of public and private assets and their use in order to identify possible adaptive reuse cases based on existing data. Moreover, new tools can be generated to map the existing culture and identity of places in terms of economy, society, and environment (Tool: T1-ROCK Web Platform Partner Name: Corvallis).

Assess the potential of the historic place: Potential of a case depends on many factors such as its location, accessibility, services, neighbouring areas, visibility, status of construction, scale of the property and possibility to accommodate certain activities, cultural value and perception. In addition to these factors, it is also important to assess possible hazards such as contamination of ground in industrial heritage. Some of these factors might be positive while some of them might be negative. The weighing of them should be assessed and based on that the heritage for adaptive reuse should be determined. Some negative aspects such as contamination can also be turned into advantage by using sustainable and cheap options such as Strijp-S, Eindhoven Sanergy project. In this project, the municipality of Eindhoven and the developer of the area VolkerWessels applied a system that purifies the soil and at the same time extracts energy from ground water. This energy is used to heat and cool the new developed and transformed buildings in the area.

Draft a baseline of the current situation: Assessing the potential and the current situation of a case will help to set indicators and enable measuring the impacts of the adaptive reuse.

ROCK Project: Replicator cities (Bologna, Lisbon and Skopje) have gone through this step and determined their potential adaptive reuse demonstration areas and buildings before the ROCK project proposal was submitted. Table 5 gives an overview of the ROCK demonstration areas, their local potentials and barriers.

In the case of **Bologna**, the demonstration site is called U-Zone which is a highly dense historic and artistic district in the city centre of Bologna, and also the base of Bologna University. The University District consists of a dynamic population (students, cultural visitors, residents, workers and artists) due to the services it provides (university, museums, theatres, food and drink retailers). **Skopje** demonstration area is centrally positioned and constituted of several urban parts, spread at 570.000 m2 (140,4 Acres). The demonstration area includes the Old Bazaar, Medieval City Fortress, main city open air green market, city centre, cultural centre with Macedonian Opera and Ballet, where faculties of four Universities are positioned, poignant with cultural institutions and six museums, four theatres and four galleries, followed with the variety of entrepreneurial models from a small artisan workshops to a large software development companies. The demonstration area (historically and today) is mostly business area, of small family shops, old and modern crafts. It also includes important cultural and social ambiences as the old Jewish Quarter, mosques, caravanserais and hans. However, parts of this area remain underdeveloped and decaying. For **Lisbon**, the initial and main demonstration area was selected as the Lisbon city centre however, due to their evaluations during the first three months of the ROCK Project, they decided to use Marvila District as the ROCK demonstration area. Marvila is a former rural and industrial territory that is between two prominent neighbourhoods but separated from both by a river and railway belt line. This situation has lessened its connections within the district and to the rest of the city, especially Lisbon's historical city centre. The mix between a rural and industrial heritage created a set of very specific traditions and societal behaviours in

Marvila, linking agricultural activities with factory workers' social and political identities. These traditions still resonate today.

Table 5. ROCK demonstration areas, their local potentials and barriers

	Bologna	Lisbon	Skopje
Area Description	The demonstration site, named U-Zone, is inside the Medieval city walls ring and it is composed by a major street, via Zamboni, where a multiplicity of institutional buildings, cultural facilities, heritage, gardens and other streets are linked with. The heart of the demo site (Piazza Verdi) is located at 400m (5 minutes' walk) from Due Torri, one of the major touristic destination, and at 800 m (9 minutes' walk) from Piazza Maggiore, the major square of the city.	Lisbon's demonstration area is the riverfront of the parishes of Beato and Marvila and its relationship with the parish of Santa Maria Maior – Baixa (Terreiro do Paço). The ROCK actions will focus on the promotion of accessibility, sustainability, and collaborations for new productions in the area. Bearing in mind the socio-territorial features of the area, the ROCK actions aim to provide new impetus for the optimisation of the tangible and intangible cultural heritage through greater inclusion of the social stakeholders.	The demonstration sites are: 1. The Old Bazaar area; 2. 'Skopje Jewish quarter'; 3. Skopje Medieval fortress. These sites are centrally located in the city. The area over which the project activities will take place includes the city fortress, the Old Bazaar, many buildings and cultural monuments, a vibrant open air green market, residential areas, commercial space, a cultural centre, faculty buildings of four universities, several museums and the area of the former Jewish neighbourhood of Skopje. The area is in urgent need of more sustainable ways of improvement and development.
Local Values and Potentials	-Mixed Neighbourhood (students, workers, institutions) -Presence of rich tangible and intangible cultural heritage -High presence of institutions and linked jobs -High presence of food and drink retailers	-Tangible and intangible cultural heritage refer to rural and industrial legacy and the traditions of the local communities living in the area. -Establishment of local, national, and international creative hubs and start-ups -Presence of NEET population (Not in Education, Employment or Training) in social and cooperative housing, and new residents on the riverfront. -Public and private investments in the area	-Variety of uses and high concentration of activities -Presence of rich tangible and intangible cultural heritage -Multicultural social fabric of the local community
Barriers	-Micro-criminality and safety problems -Conflicts between user groups (between students and residents due to noise and waste) -Lack of accessibility infrastructure -Lack of shops and businesses to attract more visitors and tourists	-Spatial constraints within the demonstration area (two train lines) -Spatial constraints with the Lisbon city centre (inadequate public transportation) -Social barriers between different parts of the territory (social and cooperative housings versus the riverfront) -Great capital investment in the riverfront and processes of gentrification -Underused or unused indoor and outdoor spaces	-No clear vision of local government for sustainable (re)development -Physical decay of the area

6.2. Establishing Vision and Goals

The visions and goals for adaptive reuse projects should be compatible with city's vision that considers local values and strengths, and local and global trends.

Understand the significance and value of the historic place: It is important to understand the past and development of heritage over time, and the interest and concerns of communities about it in order to carry its significance to future. Online mapping tools mentioned above can be used by all stakeholders in the city including citizens so that the perception of cultural heritage can be gathered by photos, comments, etc. from stakeholders. If there is no online mapping tool, workshops can be prepared to comprehend the importance of place for different groups of people considering its place in the city. This derived significance should be in-line with the cultural heritage management plan which should also be considered in the development visions and plans for CH regeneration areas.

Learn from others' experiences: Adaptive Reuse has been adopted for long time and practiced in many places. It is important to keep the local context in mind and still learn from others' experiences. For defined any expected impact, compatible case study can be found in section 4 of this document and can be contacted.

Find a use which is appropriate to the value of the historic place: Retain use if possible or find a new use that is compatible with heritage, its perception and its environment while retaining the character. This new use should be compatible with the local values, strengths and therefore with the regeneration visions and goals. Through adaptation, the authenticity of heritage should be exposed and the significance of it should be emphasized.

Take into account the scale and structure of the historic place as they would offer different opportunities for reuse. If the heritage that will be reused is a big area such as a section of a city or site, reuse will take up the form of a comprehensive area master plan. However, if the goal is small, reuse should be the facilitator of a more general regeneration process. In addition, the use would also depend on the structure and character of the heritage. The use that can be offered would be different for an industrial heritage building and a house.

ROCK project: In the three replicator cities, adaptive reuse is used as a facilitator of a more general regeneration process. The selected adaptive reuse actions of ROCK cities are supporting the overall vision and expected impacts for each city. Table 6. shows ROCK replicator cities' overall vision, the expected impacts and the supporting adaptive reuse actions. Below, each adaptive reuse action per ROCK city is explained. Table 7 shows the overview of these action in terms of their goals, expected impacts and relevance to the ROCK circles.

<u>Bologna:</u>

Piazza Scaravilli is the main adaptive reuse site within the ROCK actions. Piazza Scaravilli is a public space in Zamboni area which was used as a parking lot by the staff of the school of Economics. Within the ROCK project framework, the aim is to transform this parking lot into a dynamic garden for everyone. The actions is launched during ROCK kick-off meeting on June 16th, 2017 and the action is called "Malerbe". The interventions are realized through co-design workshops, involving the local ecosystem of stakeholders, with the participation of students of the university (in particular, from the departments of Architecture, Sociology and Agricultural Sciences), citizens and local associations, under the supervision of the university's academic staff and local design professionals. A first action was the installation of benches and a selection from highly resistant species of local vegetation, as a preview of the strategies of public space greening. The dynamic

garden has been a place where students are present during day and night time; public events and festivals are organized by local organizations and attended. The installation was used as a set for a series of events organised by local associations (Malerbe Estate), and by the Teatro Comunale (as parts of the Angelica festival for contemporary music). After this temporary transformation of the site, the University is permanently transforming Piazza Scaravilli with a new and definitive installation, that was also co-designed by students.

Events in Piazza Verdi have been part of the adaptive reuse actions as they boost the new uses and visitations for the selected intervention area. Piazza Verdi is located in the university zone and near the Opera house, full of students during the day. However, in the evenings and night, the piazza is associated with micro-crime and safety issues. The area was animated by several events which were organised as part of ROCK's of creation and diffusion of knowledge, with the aim of reducing safety issues by attracting visitors and tourists to it. Thematic meetings on ROCK themes (accessibility, sustainability, collaboration for new productions), are organized in the piazza, attracting diversity of area users. By organizing large events (i.e. festival, concerts), Teatro Comunale aims to boost the development of a common cultural approach among Piazza Verdi users and cultural institutions. After 2 years of testing and experimentations the Municipality of Bologna is organizing a wide set of events in the area, all managed by a partnership between cultural providers, cooperatives and restaurants and cafes of the area. A main stage will be installed in Piazza Verdi and cultural, artistic and entertainment events are going to be organized every day during the whole summer period in 2019.

Lisbon:

Reuse of abandoned stores on the ground floors: Marvila area contains a wide variety of "urban voids", including abandoned open spaces and underused or unused stores on the ground floors. In order to regenerate the area by tackling the processes of decay in the area, the ROCK Lisbon team collaborates with the local association Rés do Chão, whose mission is the rehabilitation of ground floor spaces, as well as the regeneration of urban areas. In the ROCK project, the association has convened to collaborate with the Municipality of Lisbon by facilitating the occupation and rehabilitation of stores on the ground floor, as well as the requalification of public space in the demonstration area. Accordingly, the association has delivered a proposal for the occupation of the stores, and the potential that the rehabilitation of theses spaces carries in the wider context. In addition, the association has focused on the relation between the stores and the public space, by proposing activities that aim to engage local residents in the regeneration of the area. A first prototype for the occupation and rehabilitation of the stores on the ground floor has been developed and finalized in October 2018. For the prototype, a store/unoccupied ground floor owned by the municipality was temporarily occupied with new activities co-designed and co-created with the local residents (e.g. workshops "design with social impact": knitting, upcycling). The prototype was called "pop-up", and served as a demonstration of the potential of the municipal ground floor as spaces that can host activities that generate social and economic impact in the territory. Following this prototype, six stores will be occupied in abandoned ground floors in the demonstration area.

New use of urban voids in open space: the other typology of "urban voids" in Marvila are abandoned open spaces. ROCK Lisbon team collaborates with the associations Colectivo Warehouse and Muita fruta /Cozinha Popular de Mouraria, which have proposed the temporary occupation of an area close to the Marvila Library. The occupation consists of the creation of a vegetable garden open to the wider community. The project is expected to create new and strong connections with the theme of the 'ecological network', i.e. 'Beato-Marvila Verde', with the more direct follow-up of the Colectivo Warehouse. Overall, the project will be co-designed, co-created, and co-produced with local residents in order to provide a new space for leisure and collective food strategy for the neighbourhood.

Skopje:

Art Fortress is a project for extension of the innovative art practices in the spatial realm between the Museum of Contemporary art in Skopje and Skopje Medieval fortress. It foresees an innovative re-use of the public space by the introduction of new spatial and CH related events and spaces. This action demonstrates how derelict public spaces in-between can be (re)created and (re)introduced at the cultural map of the city through innovative architectural and program interventions. For this project, an international competition for the urban and architectural development of the Kale Hill was launched by Skopje Living Lab. The Competition for preparation of preliminary urban and architectural development design for arrangement of the Kale Hill in Skopje constitutes an integral part of the project Kale – Cultural Fortress, organized by the City of Skopje, Faculty of Architecture, UKIM and Museum of Contemporary Art in Skopje, with the goal of encouraging the revitalization and spatial arrangement of the Kale Hill into an attractive and vibrant city attraction with various cultural, educational and recreational functions. The deadline for entries is May 15th 2019. After the conclusion of the competition a workshop with wining project designs will be organized. Development of project design and development of art pavilions is planned for the second half of 2019.

Festival of Light in Skopje (Skopje Light Art District) utilizes the public space regeneration action within the ROCK platform and establishes a new festival and social event. The Festival of light and sounds in Skopje is an annual social event that promotes the richness of natural and manufactured light as a part of the cultural heritage through inviting artists and promoting interventions and art installations in public spaces. After the successful first edition of festival of light in Skopje in October 2018, with more than twenty light installations in the public space and inside the Urban Living Lab, the second edition will be held as an independent event at the end of May, 2019. As an added value to the Festival, Skopje Light Art District organized an international/regional conference, inviting representatives of all existing regional light festivals, as well as professionals and guest speakers from the role model cities Turin and Lyon. The conference aims to set a permanent cooperation platform in the sphere of light and sound art. This will be the first initiative ever of this kind in the Balkan region.

Table 6. ROCK replicator cities' overall vision and expected impacts

	Bologna	Lisbon	Skopje
ROCK Vision	To transform the university area (Zamboni) in the historical city centre into a "Sustainable Cultural and Creative District".	To create a living lab in order to regenerate the area by working on the urban issues (socio-spatial barriers and discontinuity, preserving the social heritage of the population, lack of urban green). The Lisbon Living Lab seeks to address the multi-faceted challenges of the territory through four core topics: urban voids, ecological networks, territories of continuity and local communities versus gentrification.	To transform the historic area with the medieval fortress into a knowledge, culture and technology-driven hub. Skopje Living Lab seeks to promote creative and ICT-supported spatial practices in public spaces by bringing different stakeholders together in creative collaborative living labs, and develop innovative working and business models based on collaborative and sustainable economy.
Overall Expected Impacts	Increasing safety and security	Increasing social inclusion and territorial cohesion	Enhanced cooperation and networking
	Reducing social conflicts	Reducing inequalities and social conflicts	Fostering reuse in public spaces
	Increasing the number of visitors and tourists	Empowering local communities and promoting the connections with the city	Fostering local communities engagement

	Increasing the number of entrepreneurs and private investors	Increasing cultural and creative productions	Increasing innovation
Adaptive Reuse Actions	Malerbe Experiment in Piazza Scaravilli	Reuse of abandoned stores on the ground floors	Art Fortress project
	Events in Piazza Verdi	Occupation of urban voids in open space for a new use	Festival of Light in Public Spaces

Table 7. Adaptive Reuse Cases per Rock Replicator City

ROCK City	Thematic Action	Adaptive Reuse Case	Objectives	Expected Impacts	ROCK Scenario	ROCK Circle	Role Model
Bologna	**Hidden treasures:** Transformation of the use of space	Malerbe Experiment in Piazza Scaravilli	-To transform a university parking lot into a dynamic garden for gatherings and workshops -To implement a new way of working (research to action) -To support the social and cultural sustainability of the historical centre	-Increased social cohesion -Increased area attractiveness	-Sustainability -Collaboration	- Cultural - Green	- Athens - Turin - Cluj-Napoca
	CH production unconventional use: Temporary use of spaces; organizing events	Events in Piazza Verdi and U-Lab experimental actions	-To organize summer events for keeping the new open spaces and university area vibrant -To support the social, cultural and economic sustainability of the historical centre - to experiment different formats of activities held by a wide range of different actors	-Increased new audiences in the area -Increased area attractiveness -Increased new forms of collaborations (Public-private partnerships)	-Accessibility -Collaboration -Sustainability	- Cultural	- Eindhoven - Lyon
Lisbon	**Urban regeneration**	Reuse of abandoned ground floors	-To create a prototype for a temporary occupation in a municipal building -To implement the prototype at the abandoned ground floors in Marvila -To develop a participatory approach for this action	-Increased awareness on the opportunities and challenges of ground stores -Increased capacity of self-organisation at local level -Increased social inclusion and territorial cohesion -Increased new forms of	-Accessibility -Collaboration	- Regeneration -Cultural -Creative	-Athens -Lyon -Turin -Vilnius -Eindhoven -Bologna

				collaborations to create equal economic opportunities			
	Greening	New use of urban voids in open space	-To develop a prototype for transforming unused open spaces into urban gardens -To make innovation in the urban agriculture and food sector	-Increased awareness on opportunities and challenges of urban voids in public spaces -Increased collaboration of Marvila community with the greening initiatives promoted by local authority	-Accessibility -Sustainability -Collaboration	-Green -Cultural	-Bologna -Eindhoven
Skopje	**Art Fortress**	**Art Fortress**	-To include various disciplines into creation of the public spaces; - To create spatial and cultural extension of Museum activities within the newly created public space; -To promote knowledge and education about art through temporal events to permanent pavilions	-Increased innovative ways of using art and cultural heritage from Medieval archaeological sites of the Fortress to the Modernist background of the Museum -increased use of public space -increased educational programs about art and culture	-Accessibility -Collaboration	-Cultural -Creative -Regeneration	-Athens -Lyon -Turin -Vilnius -Eindhoven -Bologna
	Skopje Cultural Archipelago	**Festival of Light in Public Spaces**	- to promote the qualities of the public space of the historic part of the city; - to regenerate public spaces that have been neglected and showcasing their potential and attractiveness; - to demonstrate the potential of use of technology for enhanced spatial	-increased new audiences in the area -Increased public space attractiveness -increased knowledge sharing on art and digital technologies	-Accessibility -Collaboration -Sustainability	-Cultural	- Lyon - Eindhoven

			experience in the area of cultural heritage.				

6.3. Identifying and Involving Stakeholders

Partners at all scales (citizens to government) should be involved in the adaptive reuse projects in order to turn the vision into reality. As adaptive reuse is applied on existing urban spaces, there is already a community around them and this community has interests and opinions about it. AR is also related to vision and goals of the city. Therefore, all actors involved in the vision and goals, should also be involved in the adaptive reuse projects.

Involve early adopters such as artists, start-ups, creative businesses, young singles/couples from the start of the AR projects.

Ensure commitment of developers, local governance and citizens to adaptive reuse developments and sustainability of it.

Create synergies and link with other developments: Usually there are more than one AR projects conducted within one area or a city. As these projects are conducted under the same city vision and goals, they can be linked for a larger impact by creating a synergy between stakeholders of projects and also enabling physical accessibility between projects.

Generate funding: Public funding is often available to support the very early phases of adaptive reuse processes. This happens through small seed grants handed to local players. In large scale adaptive reuse projects, generally public-private partnership is recommended. This partnership should lead to a sustainable development and public funding shouldn't be used to lower private funding. As long as the area is accessible, it is possible to generate micro-economy from the adaptive reuse project by means of rents, tickets, sales, and crowdfunds. This can be enabled with bottom-up approaches such as exhibitions and events of early adopters. Another way of enabling micro-economy is through facilities in the area such as Strijp-S parking space generates money for the area management. It is also important to use innovation funds such as EU grants and tenders and combining these with ongoing developments.

Find a leader: This should be a person or a team who can steer the project through uncertainty and opportunities. This can be a professional manager, assigned person from municipality or an activist (or combination of these) who can dedicate time for a long-term process of AR projects. Because AR projects are not pre-set projects but a process. The leader should see through the process and seize opportunities and take actions.

ROCK Project: In ROCK replicator cities, one of the general aim is to have quintuple helix approach in the actions of cities. Therefore, in the start of the project, a collaboration between cities and their local universities are established. In the first year of ROCK Project, Living Labs of replicator cities have been established and opened with the purpose of fostering the involvement of citizens, local communities, institutions and start-ups. Living Labs' main role is to co-create urban transformation's solutions in a sustainable perspective, (facing urban regeneration of underused spaces, improvement of sustainable mobility systems and other issues), to develop new ideas and new start-ups, and to increase the sense of belonging of citizens. The Living Labs, promoted by ROCK and installed in the demonstration sites, are virtual and physical spaces for operational meetings that allow to share initiatives and decisions with the local participants to regenerate the cultural heritage of the city. At the starting phase of adaptive reuse actions, living labs are used to discuss the barriers and solutions for specific problems. For the solution

phase, via the management of Living Labs, the tenders are opened to call for projects and involve companies and start-ups to adaptive reuse actions. After the demonstration plans are realized, Living Labs will facilitate the monitoring of each action by involving wide array of stakeholders to discussions.

Table 8. Identifying and Involving Stakeholders per Adaptive Reuse Cases

ROCK Cities	Adaptive Reuse Case	Ownership of Place	Involved Stakeholders	Ways of Involvement	Linked Developments/Projects	Funding Resources	Action Leader
Bologna	Malerbe Experiment in Piazza Scaravilli	Government	U-Lab Employees & Students of UniBo Citizens	-U_Lab: participatory approach, involving citizens and students -University of Bologna, through co-design, co-creation and co-construction of experiences	14-month environmental sustainability programme supporting Bologna city council to develop standards and guidelines to adaptive reuse for improving CH sustainability	ROCK Project	U_Lab
	Events in Piazza Verdi	Government	Teatro Comunale Museums - Museo della Musica Area users (i.e. students of Unibo, tourists, residents)	-Teatro Comunale is organising the events -Museo della Musica is promoting the activities linked with music -U_Lab: participatory approach, involving citizens and students -University of Bologna, through co-design, co-creation and co-construction of experiences	14-month environmental sustainability programme supporting Bologna city council to develop standards and guidelines to adaptive reuse for improving CH sustainability La via Zamboni: Program of indoor events during winter and Spring of 2018 Music Events: UNESCO City of creative music, Soundscape	-ROCK Project -Public resources	U_Lab
Lisbon	Reuse of abandoned ground floors	Government	Rés do Chão Association ROCK Living Lab (ROCK CML & ICSUL Team) Residents Municipality	-The association Rés do Chão is facilitator between the residents and the municipality -ROCK LL fosters participatory approach and articulates between the community proposals for the	EU H2020 Open Heritage: Heritage re-use through inclusion, technology, access, governance and empowerment	-ROCK Project -Public resources	ROCK Living Lab

				territory and ROCK intervention			
	New use of urban voids in open space	Government	Colectivo Warehouse & Cozinha Popular de Mouraria ROCK Lisbon Living Lab (consists of ROCK CML & ICSUL Team) Residents	-Colectivo Warehouse & Muita Fruta/Cozinha Popular de Mouraria structure of proposals for communitarian vegetable garden -ROCK LLL fosters participatory approach and articulates between the community proposals for the territory and ROCK interventions	Local ecological network: "Beato-Marvila Verde" EU H2020 Open Heritage: Heritage re-use through inclusion, technology, access, governance and empowerment	-ROCK Project -Public resources	ROCK Lisbon Living Lab
Skopje	Art Fortress	Government	UKIM Skopje Urban Living Lab (SKULL) Municipality of Centar Museum of Contemporary Arts in Skopje	UKIM: Development of concepts, actions and program for implementation of activities. Municipality of Centar: facilitating activities in public space and construction of pavilions Museum of Contemporary Arts in Skopje: development and management of Art Fortress activity SKULL: Participatory process of needs assessment and Policy innovation prototyping	Project Kale – Cultural Fortress	-ROCK Project -Public resources	SKULL & Museum of Contemporary Arts in Skopje
	Festival of Light in Public Spaces	Government	SKULL UKIM Museum of the Holocaust Congress center "Univerzalna sala" MKC Youth centre for culture Artists	SKULL: Participatory process of needs assessment and Policy innovation prototyping UKIM: Knowledge provider for SKULL Museum of the Holocaust: Facilitating location Congress center "Univerzalna sala": Organization of the festival MKC Youth centre for culture: Co-organization and	Skopje Light Art District (https://www.skopjelightartdistrict.com)	-ROCK Project -Public resources	Congress center "Univerzalna sala" & SKULL

			technical support of the festival			

6.4. Identifying the Changes

Keep the change at minimum: New use shouldn't require much change in the existing structure and its capabilities. New additions or new constructions should be in harmony with the existing structure but also be clearly identifiable as new additions. Changes should accommodate building codes for fire, safety, accessibility, etc.

Changes should be reversible: If the new implemented changes or constructions are removed in the future, they shouldn't impair the original form and integrity of the historic place.

Keep record of existing material, use and values associated with the historical place and the changes that have been made. For that purpose, material passports can be generated via plan analysis and digital 3D scans.

ROCK Project: In Bologna, the adaptive reuse implementations are not done at historical buildings. The intervention Malerbe Experiment in Piazza Scaravilli is at a public space that was used as a parking garage. The changes are kept at minimum by using temporary structures (i.e. plants and wood structure) as can be seen in Figure 2. The interventions in Lisbon are similar, in which temporary structures are used for the new temporary uses, as seen in Figure 3 and 4. Figure 5 shows the temporary installations during the Light Art Festival in Public Spaces of Skopje.

Figure 2: Co-production and co design of Piazza Scaravilli in Bologna

Figure 3. **Bairro dos Alfinetes - *Rés do Chão* pop-up store in Lisbon**

Figure 4: New use of urban voids in open space in Lisbon

Figure 5: Light Art Festival in Public Spaces of Skopje

6.5. Implementing and Communicating the Changes

Communicate the history and previous uses of the historical places to its new users and visitors: The new use gives the heritage a contemporary story that can carry the memory of past. Therefore, communication of changes should be supported with the physical evidence (real or virtual) of past uses and this will result in better understanding of heritage and its importance (Tool: T2-Cultural Heritage Experiences, Partner Name: VirtualWareGroup).

Improve physical accessibility to AR projects to attract more people to the area while conserving the historic value and environment. It is important to monitor the number of people visiting the AR area, what transport mode options people have for arriving and what the background of people are that come to the area. Based on that sustainable ways of physical accessibility should be enabled for different type of people (Tools: T5-LBASense Large Crowd Monitoring, Partner Name: DFRC and T10-People Flow Analytics Partner Name: TU/e).

Attract attention and resources: From the start of the adaptive reuse process, it is important to bring people to the area because most of the AR projects are abandoned or misused places. Temporary uses and events such as street arts, interactive lighting in the streets (Tool: T9-The Culture of Light Partner Name: VBZ) or festivals can be options for attracting visitors or early adopters. Temporary uses and events can be promoted

via a bottom-up practice by giving cheap spaces to early adopters. This approach enables creating value by place-making and generates money for the AR from rents, tickets, crowd-funding, sales, etc. While events are useful for the attracting and communicating the changes with people, they also increase the use of space and therefore the CO_2 emissions in the area. Therefore the event should be carefully implemented to limit the increase in CO_2. (Tools: T4-Creative IG Tools Partner Name: Julie's Bicycle and T6-Outdoor Multi-Parameter Tools, Partner Name: ACCIONA)

Ensure environmental sustainability in the changes: Keeping the change at minimum will already provide environmental sustainability as the project will use the embodied energy. While the changes are implemented, sustainable ways should be thought such as reusing the removed parts of a building, implementing energy reduction improvements by investing new products in buildings, promoting curtailment behaviour of users in buildings and open spaces by monitoring with new technologies such as sensors and apps (Tools: T7-Outdoor Thermal Comfort, Partner Name: UNIBO, T6-Outdoor Multi-Parameter Tool Partner Name: ACCIONA).

Obtain feedback and opinions of people: Community participation in adaptive reuse projects increases the satisfaction of citizens as their needs and wishes are taken into account. This improves the decision making as the conflicts between interest groups are discussed before the project. Moreover, opinions of people on implemented changes should be gathered so it can be understood whether people are happy/satisfied with the changes (Tool: T3-Integrated CH Analytics Partner Name: VGTU)

ROCK Project: In the beginning of the demonstration actions, local communities will perform "users' tests" with the technological tools during participatory initiatives at the Living Labs, to suggest adaptive calibration to specific local context. This interactive validation process will guarantee high quality and a crucial support to the development of the demonstration area. Technological tools are seen as significant supporters of ROCK actions since data provided by these tools are used in the assessment and monitoring phase of demonstrations. Technological tools are mainly linked with the thematic actions and not directly associated with the specific adaptive reuse actions. One of the reason is that these tools are traversal and can be used for several actions. Yet they are supportive of the AR actions since they provide the necessary feedback for their monitoring and assessment. Therefore, efficient ways of using several technological tools are decided (i.e. testing and using the technological tools during events in the area). Below Table 9 shows how the AR cases can benefit from the use of tools in the intervention areas. In the assessment phase, data coming from technological tools implemented in the LLs and all feedbacks from participatory approaches will be filed in ROCK platform. The platform will enable cities to monitor the results of their actions.

Regarding the communication and dissemination of activities, the three replicator cities are using diverse channels in line with the project DoA and the Communication and Dissemination Plan. In Bologna, a local website of Zona_U was developed: https://bologna.rockproject.eu/ This website is the key channel for communication on the local level, and it is maintained by the Replicator in the Italian language. The website provides information of two types: the description of the ROCK project and particularly Zona_U, and the regularly updated News&Events section, populated with the information about local activities implemented in or related to Zona_U. In Lisbon, a local website of the Beato-Marvila area was developed: https://lisboa.rockproject.eu/ This website is the key channel for communication on the local level, and it is maintained by the Replicator in the Portuguese language. The website provides information of two types: the description of the ROCK project and particularly the Beato-Marvila area, and the regularly updated sections News and Blog, populated with the information about local activities implemented in or related to the Beato-Marvila area. In Skopje, a local website of the Replicator is currently being developed (https://skopje.rockproject.eu/). This website will be the key channel for communication on the local level, and it will be maintained by the Replicator in the Macedonian language. The website will provide information about local activities implemented in or related to Replicator as well as an overview of the ROCK project.

Learn lessons from success and failures and update current strategies: Any failed step should be kept as a log and used as a recommendation for the on-going and future developments.

Identify next steps for improvement: As Adaptive Reuse is not a pre-set project, the process should feed itself with improvements and new developments. Based on all actions, next steps should be defined and further improvement should be enabled.

Ownership of AR cases: AR actions require an interdisciplinary approach with the involvement of multiple players across the public, private and nongovernment sectors, not only to initiate and carry out conservation but also to sustain the place. It is also widely recognized that AR actions need to be embedded within social, environmental and economic development strategies that include financial mechanisms to encourage and facilitate public-private and third-sector contributions.

ROCK Project: One of the goals of the project is to deliver effective monitoring and evaluation framework, which is dealt within WP4. The monitoring feedback loop will result in an iterative stream addressed to enlarge and maximize the upscale and exploitation potential of the project. For that purpose, the impact measurement will check the effective outcomes/performance of the project. A Monitoring, Reporting, Evaluation Framework will assess (including 2 additional years beyond project's life) the related impacts with reference to the potential replication and up scaling at local/regional level. In order to do so, indicators for each AR action should be defined and elaborated to assess the impact.
After the project ends, the AR cases should be sustained for the continuity of the impacts. Cities should consider how the integrity of stakeholders, the resources (funding, budgeting and time) of next actions will be continued; how the actions will be integrated to local and EU actions. Therefore, new governance and ownership type has to be identified. This aspect will be further detailed in deliverable 2.5 "Integrated Management Plan".

Table 10. AR cases and further actions

ROCK Cities	Adaptive Reuse Case	Start Time	Assessment Periods	Next Steps	Actions to take	Foreseen Ownership
Bologna	Malerbe Experiment in Piazza Scaravilli	June, 2017	-January, 2018: a co-designed workshop—Utopia Concreta— to present the new design to the thematic lab -July, 2018: a co-designed artistic installation by a team of students	-Turning the experiment installations from temporary to permanent. -Provision of sustainable financing and management of interventions in public spaces	-Monitoring social cohesion (inclusion of variety of groups in implementation and use of the space) -Monitoring increased attractiveness (with use of parameters from tools and on-site workshops, surveys) -Determine what is achieved and not achieved	Not yet available
	Events in Piazza Verdi	June, 2018	-September 2018 evaluation of results and number of people	Continuation of events	-Monitoring changes in perception/sentiment of the area users -Monitoring the number of people using the area and attending the events	Public & Private

			attending the events - June 2019 evaluation of sentiment - October 2019 evaluation of results and number of people attending the events			
Lisbon	Reuse of abandoned ground floors	January, 2018	-October, 2018: Creation of a prototype is finalized, for a temporary occupation in a municipal building and a set of associated activities with the Marvila residents.	Implementing the prototype for occupation of 6 other abandoned ground floors. -Game Lab - Bapadreams -Teatro Ibisco -Teatro do Vestido -Eira – Dance Company -Marvila's Library "shop" -Capoeira "Beija Flor"	-Monitoring social cohesion (inclusion of variety of groups in implementation and use of the space) -Monitoring increased awareness (with use of parameters from tools and on-site workshops, surveys) -Assess the replicability -Determine what is achieved and not achieved	Public & Private
	New use of urban voids in open space	October, 2018	June, 2019: Selection of open space, selection of urban greens; inclusion of stakeholders.	-Creation of a prototype will be finalized. -New open spaces will be determined for replication.	-Monitoring social cohesion (inclusion of variety of groups in implementation and use of the space) -Monitoring increased awareness (with use of parameters from tools and on-site workshops, surveys) -Assess the replicability -Determine what is achieved and not achieved	Public & Private
Skopje	Art Fortress	2017	-April, 2019 Open competition for populating the space with temporary pavilions for accommodating some of the contents of the Museum of Contemporary Art -June, 2019 Selection of the	-Developing the project design and art pavillions -Turning the experiment installations from temporary to permanent. -Provision of sustainable financing and management of interventions in public spaces	-Monitoring social cohesion (inclusion of variety of groups in implementation and use of the space) -Monitoring increased attractiveness in public spaces (with use of parameters from tools and on-site workshops, surveys) -Monitoring the number of education and knowledge sharing activities in the area	Not yet available

					-Determine what is achieved and not achieved	
			winner of the competition -December, 2019: developed project design and art pavilions			
	Festival of Light in Public Spaces	2017	October, 2018: First edition of the event. -Evaluation of progress in use of space and replicability of the event -Project manager is appointed -Initial plans are established to conduct it as an independent event in May, 2019 and to integrate it with Skopje White Night event in October, 2019	Continuation of events in public spaces. Next editions: May, 2019 & October, 2019	-Monitoring increased attractiveness (with use of parameters from tools and on-site workshops, surveys) -Monitoring changes in perception/sentiment of the area users with use of parameters from tools and on-site workshops, surveys) -Monitoring the number of people using the area and attending the events -Determine what is achieved and not achieved	Public & Private

7. Conclusion

This deliverable provides information based on the circles of sustainability which considers culture and identity in the centre of development for economy, ecology and society. The aim of this deliverable is to help cities to implement adaptive reuse in historic areas and enable the sustainability of it, in view of innovation economy, environmental sustainability and social cohesion. It involves steps starting from understanding the context of cities, how each city can be a role model for another for specific aspects and possible steps for implementing the adaptive reuse projects.

The guidelines reflect a wide range of experiences from ROCK cities. However, they need interpretation in the local context, which may lead to approaches that are somewhat different from those described in this document. The case studies and related tables illustrate how AR demonstrations are approached by ROCK replicator cities and the current states of the actions. This document is considered to be a living document and will be updated during the project with new case studies, new lessons learnt both from role model and replicator cities of ROCK Project, qualitative and quantitative data collections.

At the end of the project, this deliverable together with 2.5 (Integrated Management Plan) will be integrated to deliverable 2.2 (ROCK Urban Circular System) which will construct a complete methodology for CH-led sustainable growth for ROCK community.

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