



Circular models Leveraging Investments
in Cultural heritage adaptive reuse

◆ D6.16
Second series scientific
publications



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Deliverable D6.16 Second series scientific publications

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Abstract

As required by Article 29 of the Annotated Model Grant Agreement (*Dissemination of Results - Open Access - Visibility of EU Funding*) and indicated in CLIC “C&D&E Plan annual update” (D 6.1 see Section 5 “Obligations of CLIC beneficiaries”), the CLIC Consortium has disseminated project results as soon as possible, by disclosing them to the public by appropriate means, including in scientific publications (Art. 29.1). Each beneficiary has granted open access to all peer-reviewed scientific publications uploading them mostly on Zenodo platform (<https://zenodo.org/>) and other open-access repositories (Art. 29.2). In accordance with Art. 29.4 of the AGA, all scientific publications developed within the project contain the following disclaimer giving information on EU funding:

"This research was funded under the framework of Horizon 2020 research project CLIC: Circular models Leveraging Investments in Cultural heritage adaptive reuse. This project has received funding from the European Union's Horizon 2020 research and innovation program under Grant Agreement No 776758".

The present deliverable provides metadata and abstracts of the second series of scientific publications produced by CLIC Consortium during the second year of project activities from M12 (November 2018) to M24 (November 2019). It includes scientific products that have been published in journals, monographs or conference proceedings, uploaded on the project website at <https://www.clicproject.eu/scientific-publications/>. A list of forthcoming publications has been provided.

Partners involved in the document

Participant No	Participant organisation name	Short Name	Check if involved
1 Coordinator	CONSIGLIO NAZIONALE DELLE RICERCHE	IRISS CNR	X
2	UPPSALA UNIVERSITET	UU	X
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-UNG ¹	
8	WIRTSCHAFTSUNIVERSITAT WIEN	WU	X
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	

¹ This Partner has required the change of the short name of the organization from ETCAEH to UNG. This request has been included in the amendment which is currently being submitted.



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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

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

The Deliverable 6.16, *Second Series Scientific Publications*, falls within the project work package focused on *Dissemination, exploitation and communication* (WP6) and, precisely, within the Task 6.3 *Implementation of communication and dissemination activities envisaged* (M1-M36).

This document provides metadata and abstracts of the second series of scientific publications produced by CLIC Consortium during the second year of project activities from M12 (November 2018) to M24 (November 2019), as shown in Annex 1.

Furthermore, Annex 2 contains a list of forthcoming publications, and precisely 4 papers presented by CLIC researchers at the *18th Annual STS Conference Graz 2019 - Critical Issues in Science, Technology and Society Studies* (Graz, May 6-7, 2019), jointly organized by the Science Technology and Society Unit of the Institute of Interactive Systems and Data Science of the Technical University of Graz, the Inter-University Research Centre for Technology, Work and Culture (IFZ) and the Institute for Advanced Studies of Science, Technology and Society (IAS-STS).

Within this Conference, a special session, *Is the Circular Economy able to transform the built environment in cities?*, chaired by Gillian Foster (Vienna University of Economics and Business), focused on new researches exploring Circular Economy concepts that transform the urban built environment to be more sustainable, inclusive, and future-ready. This session has highlighted how the refurbishment and adaptive reuse of underutilized or abandoned buildings can revitalize neighborhoods whilst achieving environmental benefits, showing how cultural heritage buildings can be modified to reflect the new needs of communities whilst increasing public access to icons of unique local cultures.

The abstracts of the papers presented at the 18th STS Conference Graz 2019 have been included in the Book of Abstracts, available at the following link: https://sts-conference.isds.tugraz.at/event/2/attachments/1/31/BoA__STS_Conference_Graz_2019.pdf

3 Annex 1 - Second Series Scientific Publications

METADATA	
DOI	10.13128/aestim-7007
Type of publication	Scientific article
Repository Link	https://oaj.fupress.net/index.php/ceset/article/view/7007/7369
Title of publication	Matera: city of nature, city of culture, city of regeneration. Towards a landscape-based and culture-based urban circular economy
Authors	Fusco Girard, Luigi Nocca, Francesca Gravagnuolo, Antonia
Title of the Journal/Proceedings/Book	Aestimum
Number, date or frequency of the Journal/Proceedings/Book	AESTIMUM 74, Giugno 2019
Relevant Pages	5-42
Keywords	Matera circular city; Urban circular economy; Impact evaluation
ISSN	NA
e ISSN	NA
Publisher	Firenze University Press
Place of publication	Firenze
Year of publication	2019
Is this publication available in Open Access or will it be made available?	YES – Available in Gold Open Access (no fee)
Is this a peer-reviewed publication?	YES

ABSTRACT

Each city is a living organism with its own dynamics. Cities, as complex dynamic and adaptive systems, are able of self-organization/self-management. There are many causes of the decline of cities today (poverty, unemployment, etc.) that interdepend on the others in continuous retroactive processes. The general proposal of this paper refers to a key word: “regeneration” as revitalization of the activities in the perspective of the circular economy/city. The aim is to explore how an urban circular economy can be implemented through a cultural landscape-based approach, analyzing the case study of Matera (Italy) and assuming the interdependence between a specific landscape and the circular economy/city models. The aim is to understand how to transform a millennial experience of underdevelopment into a dynamic development perspective.

METADATA	
DOI	https://doi.org/10.3390/su11133512
Type of publication	Scientific article
Repository Link	https://www.mdpi.com/2071-1050/11/13/3512
Title of publication	Circular Economy Strategies in Eight Historic Port Cities: Criteria and Indicators Towards a Circular City Assessment Framework
Authors	Gravagnuolo, Antonia Angrisano, Mariarosaria Fusco Girard, Luigi
Title of the Journal/Proceedings/Book	Sustainability Special Issue "Operationalizing the Circular City Model for Metropolitan and Port Cities Regeneration: Multiple Approaches, Tools and Evaluations"
Number, date or frequency of the Journal/Proceedings/Book	Sustainability 2019, 11(13), 3512
Relevant Pages	3512
Keywords	Circular economy; circular city; urban circular economy; port cities; historic cities; built environment; indicators; evaluation; urban metabolisms
ISSN	NA
e ISSN	NA
Publisher	MDPI
Place of publication	NA
Year of publication	2019
Is this publication available in Open Access or will it be made available?	YES – Available in Gold Open Access (total amount charged by the Publisher: 1,115.78 EUR)
Is this a peer-reviewed publication?	YES

ABSTRACT

The circular city is emerging as new concept and form of practice in sustainable urban development. This is a response to the complex and pressing challenges of urbanization, as highlighted in the New Urban Agenda (NUA). The concept of a “circular city” or “circular city-region” derives from the circular economy model applied in the spatial territorial dimension. It can be associated with the concept of a “self-sustainable” regenerative city, as stated in paragraph n.71 of the NUA. This paper aims to develop an extensive form of “screening” of circular economy actions in emerging circular cities, focusing on eight European historic port cities self-defined as “circular”. The analysis is carried out as a review of circular economy actions in the selected cities, and specifically aims to identify the key areas of implementation in which the investments in the circular economy are more oriented, as well as to analyze the spatial implications of the reuse of buildings and sites, proposing a set of criteria and indicators for ex-ante and ex-post evaluations and monitoring of circular cities. Results show that the built environment (including cultural heritage), energy and mobility, waste management, water management, industrial production (including plastics, textiles, and industry 4.0 and circular design), agri-food, and citizens and communities can be adopted as strategic areas of implementation of the circular city model in historic cities, highlighting a lack of indicators in some sectors and identifying a possible framework for “closed” urban metabolism evaluation from a life-cycle perspective, focusing on evaluation criteria and indicators in the (historic) built environment.

METADATA	
DOI	http://dx.doi.org/10.2423/i22394303v9n1p79
Type of publication	Article in Scientific journal
Repository Link	http://www.sciresit.it/article/view/13073/11826
Title of publication	Progression Analytics and Establishing Continuum of Participatory Governance in Cultural Heritage
Authors	Jermina Stanojev
Title of the Journal/Proceedings/Book	SCIRES-IT - SCientific RESearch and Information Technology
Number, date or frequency of the Journal/Proceedings/Book	Volume 9, Issue 1 (2019)
Relevant Pages	79-90
Keywords	Cultural heritage, participatory governance, European Year of Cultural Heritage 2018, CLIC
ISSN	2239-4303
e ISSN	2239-4303
Publisher	CASPUR-CIBER Publishing - Pubblicazioni ecosostenibili
Place of publication	Online
Year of publication	2019
Is this publication available in Open Access or will it be made available?	YES – Available in Green Open Access
Is this a peer-reviewed publication?	YES

ABSTRACT

A participatory approach was at the heart of understanding the European Year of Cultural Heritage 2018 and consequently after the end of 2018, the cultural heritage sector is putting efforts to understand if the approach was a contemporary trend, a methodology for the Year itself, a topic that was widely discussed, an outlook that is becoming more and more embedded in cultural heritage practices or a synthesis of all aspects. The paper explores if and how the European Year has contributed to advance and progress the understanding of the approach and enhance practices of the participatory governance of cultural heritage. The CLIC project and HIP process implemented within the project is presented and explored as one of the case studies of the participatory approach.

METADATA	
DOI	http://dx.doi.org/10.2423/i22394303v9n1p21
Type of publication	Article in Scientific journal
Repository Link	http://www.sciresit.it/article/view/13067/11817
Title of publication	Conservation 3.0 – Cultural Heritage as A Driver for Regional Growth
Authors	Christer Gustafsson
Title of the Journal/Proceedings/Book	SCIRES-IT - SCientific RESearch and Information Technology
Number, date or frequency of the Journal/Proceedings/Book	Volume 9, Issue 1 (2019)
Relevant Pages	21-32
Keywords	Conservation, cultural heritage, smart specialisation strategies, regional growth, trading zone, CLIC
ISSN	2239-4303
e ISSN	2239-4303
Publisher	CASPUR-CIBER Publishing - Pubblicazioni ecosostenibili
Place of publication	Online
Year of publication	2019
Is this publication available in Open Access or will it be made available?	YES – Available in Green Open Access
Is this a peer-reviewed publication?	YES

ABSTRACT

Cultural heritage as well as its interpretation are in constant flux. Conservation principles and praxes have also been changed according to new challenges and opportunities which have occurred in times of sustainable development and smart specialisation strategies. This study discusses the development of the cultural heritage sector since the 1960s. The concept, Culture 3.0, is used as a point of departure to understand the development from a supply-driven conservation praxis, Conservation 1.0 (with focus on protection), via Conservation 2.0 (with conservation and restoration in focus), to a demand-driven conservation praxis, Conservation 3.0, with focus on adaptive re-use and spill-over effects in connection with sustainable development and regional growth. Going from protection to pro-action, cultural heritage advocates need to leave their comfort zone and enter the trading zone. CLIC project and adaptive re-use have been explained in this newly developed context.

METADATA	
DOI	URI: http://repository.corp.at/id/eprint/516
Type of publication	Conference paper included in conference proceeding
Repository Link	https://repository.corp.at/516/ direct link to publication: https://archive.corp.at/cdrom2019/papers2019/CORP2019_140.pdf https://research.tue.nl/en/publications/the-role-of-ict-in-mapping-resources-for-sustainable-historic-urb
Title of publication	The role of ICT in mapping resources for sustainable historic urban regeneration: case studies of Amsterdam and Salerno
Authors	Lu Lu Nadia Pintossi, Gamze Dane, Ana Pereira Roders
Title of the Journal/Proceedings/Book	Schrenk, M.; Popovich, V. V.; Zeile, P.; Elisei, P.; Beyer, C.; Ryser, J. (Eds.): <i>IS THIS THE REAL WORLD? Perfect Smart Cities vs. Real Emotional Cities</i> . Proceedings of REAL CORP 2019, 24th International Conference on Urban Development, Regional Planning and Information Society. Vienna, 2019.
Number, date or frequency of the Journal/Proceedings/Book	2019
Relevant Pages	985-991
Keywords	Regeneration, GIS, mapping, ICT, sustainability
ISSN	ISSN 2521-3938
e ISSN	ISBN (Electronic)978-3-9504173-6-4
Publisher	CORP – Competence Center of Urban and Regional Planning Kompetenzzentrum für Stadtplanung und Regionalentwicklung Klosterneuburger Straße 121/36, 1200 Wien, Österreich
Place of publication	Vienna, Austria
Year of publication	2019
Is this publication available in Open Access or will it be made available?	YES – Available in Gold Open Access (the publication was included in the conference fee)
Is this a peer-reviewed publication?	NO

ABSTRACT

According to the UNESCO Recommendations on the Historical Urban Landscape (HUL), mapping the available resources is critical for successful project implementation. These resources entail natural, cultural and human resources ranging from tangible to intangible. Mapping these resources can contribute to a systematical identification, analysis, and classification of location-based values for the management of a sustainable historic urban regeneration process. Currently, the mainly adopted mapping approaches are paper map, online mapping applications, non-spatial mapping, geography information system (GIS), surveys and interviews. These tools include both traditional and innovative tools, however they are quite diverse and not integrated. The innovative tools incorporating information and communication technology (ICT) are recognized to be useful to foster a public inclusion and a bottom-up management for the sustainable historic urban regeneration. This because these tools enable a variety of actors to create and visualize data. Based on this proposition, this research investigates the role of ICT in mapping resources in particular in a participatory way to support an inclusive implementation of sustainable historic urban regeneration practices.

In this paper, the role of ICT is studied through literature review and case studies. The literature review provides the current application in and future potential of ICT for mapping resources. To complement the results of the literature review, two case studies are conducted in Amsterdam (The Netherlands) and Salerno (Italy). The case studies show that different data sources such as location-based social networks, administrative data, online and offline surveys and interviews, and local sensors are useful for participatory mapping of resources. This assessment of two case studies revealed that ICT platforms such as open data platforms, interactive platforms, decision support systems are recognized as three main solutions for disseminating knowledge to the public and enable their participation in historic urban regeneration processes.

The outcomes show that ICT has potential for fostering the public participation to achieve sustainable regeneration of historic urban areas.

METADATA	
DOI	https://doi.org/10.1016/j.resconrec.2019.104507
Type of publication	Peer-reviewed Scholarly Journal Article
Repository Link	https://zenodo.org/record/3531356#.Xd21Zi-h2gQ
Title of publication	Circular economy strategies for adaptive reuse of cultural heritage buildings to reduce environmental impacts
Authors	Gillian Foster
Title of the Journal/Proceedings/Book	Resources, Conservation and Recycling
Number, date or frequency of the Journal/Proceedings/Book	Volume 152, January 2020, 104507
Relevant Pages	1 – 14
Keywords	Circular economy, Adaptive reuse, Cultural heritage, Sustainability, Urban planning, Buildings
ISSN	0921-3449
e ISSN	0921-3449
Publisher	Elsevier
Place of publication	The Netherlands
Year of publication	Online version: October 2019 Print version:2020
Is this publication available in Open Access or will it be made available?	YES – Attribution 4.0 International (CC BY 4.0)
Is this a peer-reviewed publication?	YES

ABSTRACT

Circular economy strategies seek to reduce the total resources extracted from the environment and reduce the wastes that human activities generate in pursuit of human wellbeing. Circular Economy concepts are well suited to the building and construction sector in cities. For example, refurbishing and adaptively reusing underutilized or abandoned buildings can revitalize neighborhoods whilst achieving environmental benefits. Cultural heritage buildings hold a unique niche in the urban landscape. In addition to shelter, they embody the local cultural and historic characteristics that define communities. Therefore, extending their useful lifespan has multiple benefits that extend beyond the project itself to the surrounding area, contributing to economic and social development. To explore this complex issue, the research applies systematic literature review and synthesis methods. Decision makers lack knowledge of the environmental benefits of adaptive reuse of cultural heritage buildings and lack tools to implement these projects. A new comprehensive circular economy framework for the adaptive reuse of cultural heritage buildings to reduce environmental impacts intends to meet these needs. The framework integrates methods and techniques from the building and construction literature that aim to reduce lifecycle environmental impact of buildings with a circular product supply chain approach.

4 Annex 2 - List of forthcoming publications

Gravagnuolo, A., De Angelis, R., Iodice, S. (2019). *Circular Economy strategies in the Historic built environment: Cultural heritage Adaptive Reuse*. Proceedings of the International Conference 18th Annual STS Conference Graz 2019 - Critical Issues in Science, Technology and Society Studies. Graz, May 6-7, 2019.

Acri, M., Dobričić, S. (2019). *The circular character of building tradition: Which challenges for the HUL approach?* Proceedings of the International Conference 18th Annual STS Conference Graz 2019 - Critical Issues in Science, Technology and Society Studies. Graz, May 6-7, 2019.

Roszczyńska-Kurasinska, M., Domaradzka, A., Słosarski, B., Zbikowska, A. (2019). *Embracing circularity. Individual factors in implementing innovation*. Proceedings of the International Conference 18th Annual STS Conference Graz 2019 - Critical Issues in Science, Technology and Society Studies. Graz, May 6-7, 2019.

Stanojev, J., Gustafsson, C. (2019). *Circular Economy Concepts for Cultural Heritage Adaptive Reuse implemented through Smart Specialisations Strategies*. Proceedings of the International Conference 18th Annual STS Conference Graz 2019 - Critical Issues in Science, Technology and Society Studies. Graz, May 6-7, 2019.