# °ARCH



# Local partnership and work plan for Camerino

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# **Table of contents**

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1.	Where are we?	4
	1.1. Governance framework for cultural heritage management, disaster risk reduction and clima adaptation	ate 6
	1.2. Expected impacts of climate change and environmental hazards	. 8
	1.3. Resilience of historic areas and the larger urban system	. 8
2.	Who are we?	9
	2.1. Existing capacity	. 9
	2.2. Capacity gaps	11
	2.3. Stakeholder analysis process and results	11
	2.4. Existing groups and initiatives	12
	2.5. Our local partnership	12
3.	Where are we going?	13
	3.1. Our overall aim	13
	3.2. Objectives	13
4.	How will we get there?	13
	4.1. Work plan	13
	4.2. Activities to develop and implement your work plan	14
	4.3. Strategy to collaborate with local partners	16
	4.4. Checking and reporting on progress	16

# Local work plan: Camerino

## 1. Where are we?

Camerino is one the four pilot cities of the ARCH Project with Hamburg, Bratislava and Valencia and it is engaged into the development of strategies, tools and methods to address issues related to geophysical and meteorological hazards, making more resilient its territory and population with a specific attention to the preservation and the enhancement of its cultural heritage. Reduction of the effects from natural hazards as well as resilience management, in all its forms (e.g. physical, social, economic), need to be considered as new topics and challenges for the city of Camerino, which require new approaches and new visions. Camerino has always been aware of the value of its cultural heritage (whether built, natural or social) as a fundamental element of its identity, and the corresponding need to conserve and improve it. According to the principles and the fundamentals of the ARCH project, the key-elements and the general approach for the city of Camerino are identified with: collaboration; integration of solutions; support with research and gathering; and constant updating, sharing and dissemination of results, outputs and new achieved expertise. The collaboration with the research partners and stakeholders, considered as co-authors of the choices and targets to be achieved, is a fundamental part of the Camerino contribution to this project.

In relation to the wide range of natural hazards and climate related risks, the city of Camerino recognises specific natural hazards that affected the cultural heritage, the safety and the wellbeing of inhabitants and the development of the old town. These include seismic hazards, mass movement and extreme precipitation. These three elements represent the most hazardous phenomena which can provide very hard impacts, as happened in the past and recent years, reducing and resetting the development of the community. These three hazards represent a "trinominal" system that needs to be addressed with integrated analysis, tools and solutions. These three hazards are generative of several effects and impacts on the social, economic, building and infrastructural systems, due to the specific characters of the natural and built environments of Camerino.

The city of Camerino is aware of the vulnerabilities related to these risks, having directly experienced (and continuing to recover from) their effects, which have recently produced many damages and difficulties for the population. The current situation of Camerino is mostly ruled by the seismic events that happened in 2016, which have caused many damages, destruction, depopulation, the end of economic activities and services, and altered the life of inhabitants. The reconstruction process of Camerino is starting, after a long emergency period, with the will to take advantage of the new opportunities based on resilience and adaptation approaches to enhance knowledge about, and preparedness for, the identified natural hazards. Several barriers and limits exist, represented in general by: gaps in digital information; gaps in sharing information systems; lack of direct data and low level of detail about climate and meteorological conditions; insufficient and not integrated information about hydro-geological and geomorphological systems; lack of knowledge on appropriate construction materials and techniques; nonexistence of specific and coordinated emergency plans for cultural heritage; and, in particular, the lack of data and digital tools in order to assess risk scenarios considering

impact chains and simultaneous critical events due to different hazards. In January 2017, a major heavy snowfall occurred in Camerino a few days after a significant seismic event; demonstrating that an extreme climatic event can influence also the evacuation strategies related to civil protection needs.<sup>1</sup>

#### **1.1. Target historic areas**

The target historic area for the ARCH project is Camerino's Old Town, enclosed within the medieval defensive walls (see Figure 1). Camerino's Old Town is an ancient urban centre that was expanded during the Roman Age. Nowadays, the road network design is essentially based on the medieval pattern. The urban morphology of the Old Town is characterised by a compact and continuous urban context with high building density and by narrow and small streets, trails and paths, a distinctive character of the middle age structure with no grids. The Old Town contains a large number of historic buildings, churches, monuments and artworks, representing a comprehensive and vulnerable cultural heritage system. Due to its ancient medieval structure and its location, the Old Town of Camerino is mainly exposed to seismic and geomorphologic hazards and weather events like heavy snowfalls. Two case studies have been selected within the old town of Camerino, due to their architectural, historical and cultural value: The Ducal Palace (13<sup>th</sup> to 15<sup>th</sup> century) and Santa Maria in Via's Church (16<sup>th</sup> century). These will be used as references for the vulnerability and resilience level of the entire historic area.

<sup>&</sup>lt;sup>1</sup> Some tools available here: http://wiki.resin.itti.com.pl/supporting-tools/method-multi-criteria-analysis/



Figure 1. Camerino's Old Town (target area).

The main relevant hazards are earthquakes, geomorphologic and heavy snowfalls. Two very large earthquakes occurred in 1997 and 2016, reflecting the weakness of Camerino's Old Town in terms of the preservation of the cultural heritage and safety of the population. Some areas highlight the necessity of studies on geomorphologic and geological features of the urban sites, exposed to landslides. Climatic hazards concern the influence of the snow precipitation in winter on main local infrastructure (electricity, communications, public transport, roads etc.)

# 1.2. Governance framework for cultural heritage management, disaster risk reduction and climate adaptation

Considering the governance framework for the target historic area, all levels of government (national, regional and local) need to be considered when it comes to cultural heritage management, disaster risk reduction and climate adaptation. The legal framework for cultural heritage management is strong at the national, regional and local level. Regional, Municipal and Local authorities cooperate with the National Ministry of Cultural Heritage, Activities and Tourism (Legislative Decree 42/2004; Legislative Decree 62/2008; Regional Law 04/2010), but without considering aspects like climate change and disaster risk in the cultural heritage preservation, protection and development visions. The Camerino Municipality does not have specific plans, programmes or guidelines about Disaster Risk Management on Cultural

Heritage in spite of the various museums<sup>2</sup>, historical palaces<sup>3</sup> and churches<sup>4</sup> in the Old Town. The Council member of the Camerino's Municipality has only the competences conferred on the planning and management of ordinary maintenance of historic buildings and landscapes, and other cultural heritage assets.

The management of the phases after disaster events is mainly entrusted to the Civil Protection Department, such as for the last seismic event (2016). The local civil protection office of a Municipality (C.O.C.) is the first authority that organises the response to a disaster or to an emergency before the possible interventions of the regional and national civil protection authorities. In relation to the management after disaster events of cultural heritage, the Italian Ministry of Cultural Heritage, Cultural Activities and Tourism (MIBACT) established, with circular n. 12/2012, dedicated regional coordination units, activated in the event of emergencies from natural disasters for the coordination and monitoring of interventions connected with the safeguarding of cultural heritage. The Regional crisis coordination unit (CCR) has the task to couple MIBACT, Civil Protection, Fire Brigade and Local Institutions. The aims of CCR are: coordinate the activities of Ministry personnel on the territory, ensure the necessary connection with the organizations assigned to emergency interventions, identify and manage the teams responsible for damage to cultural heritage, guarantee the supervisory and support functions during all emergency phases. The Municipality of Camerino has so far not developed a detailed pre-disaster planning framework for its cultural heritage sites (partly due a lack of detailed risk scenarios). High quality maps and information about earthquakes and geomorphological hazards are available, but their accessibility between departments could be improved, and they have not yet been directly applied to developing and assessing future risk scenarios. The local and regional civil protection offices do, however, have defined procedures for post-disaster management. In fact, the regional authorities refined their civil protection strategies after previous local emergencies, such as after the Marche-Umbria Earthquake occurred in 1997. The critical infrastructure providers do not have a specific agreement with the municipality for resilience improvement, but they support the municipality when disasters occur.5

The Office for Environment and Public Works can be considered the local public service more suited to manage climate change adaptation. However, there are no current specific and effective plans nor actions on climate change adaptation at the local level, - only strategies and policies at the regional level (Regional Plan for Climate 2007; Regional Environmental and Energy Plan 2016).

<sup>&</sup>lt;sup>2</sup> Civic and Diocesan museums and local artworks collections.

<sup>&</sup>lt;sup>3</sup> Ducal Palace, Archbishop's Palace, Bongiovanni's Palace, Theater Marchetti, Borgia's Fortress.

<sup>&</sup>lt;sup>4</sup> S. Venanzio's Church, S. Annunziata's Church, S. Domenico's monastery, S. Filippo's Church, S. Maria in Via's Church.

<sup>&</sup>lt;sup>5</sup> Some basic information of the civil protection plan (in Italian) at: https://www.comune.camerino.mc.it/documenticms/relazione-piano-di-protezione-civile/?a=. Further details are reported in other confidential documents in the Camerino's Technical Office.

#### 1.3. Expected impacts of climate change and environmental hazards

The Municipality of Camerino does not have detailed information to undertake planning for the most probable impact scenarios related to climate change and environmental hazards. There are general data concerning the environmental hazards and preliminary studies on geological, geomorphological and seismic features of urban and rural area in order to define urban planning strategies and management of the municipal area. The assessment of the expected impacts of climate change and environmental hazards needs additional studies. Starting from natural hazard, exposure and vulnerability data, expected impact scenarios will be developed by a GIS-based decision support system developed by ENEA research institute.

In terms of seismic risks, a database of the construction techniques, seismic vulnerabilities and structural damage sustained will be developed for the entire old town of Camerino. Moreover, the available data sheets concerning the construction techniques and the structural vulnerabilities of the buildings in the historic inner area, filled out after the Central-Italy Earthquake (2016) will be analysed. Specific analyses of the construction techniques and of the chemical, physical and mechanical properties of the materials (bricks and mortars) will be carried out. Secondary hazards like meteorological events may be analysed in order to define emergency strategies

#### 1.4. Resilience of historic areas and the larger urban system

The resilience status of Camerino, according to the Preliminary Disaster Resilience Assessment conducted by Fraunhofer for Camerino's City baseline review (D3.2) according to the Resilience Scorecard (developed by the United Nations International Strategy for Disaster Reduction [UNISDR] could be considered moderate in general with large potential for improvements, but current capacity in terms of resilience actions for the old town as well as the entire municipality is very low – with gaps on knowledge, expertise and tools. Some spheres of resilience with major deficits indicating a low resilience level are: (i) planning and integration of resilience, (ii) strengthening institutional capacity, (iii) infrastructures and (iv) identification and use of future risk scenarios.

On the other hand, other aspects that are already well consolidated are: (i) the will and the availability to pursue a resilient urban development, (ii) the awareness of the value of natural and cultural heritage, (iii) services and functions for post events concerning evacuation strategies, post disaster recovery organisation, temporary protection system, emergency stabilization of the buildings, removal and relocation of artworks in temporary sites, urban reconstruction strategies, etc. To improve and build on the resilience capacity of Camerino, there are different key areas to develop and better organise, in particular the following points:

- Enhancing local partnerships and support communication with citizenship;
- Taking advantage of current digital technologies and knowledge: use of risk scenarios;
- Institutional capacity;
- Effective disaster response;
- Financial capacity.

## 2. Who are we?

The ARCH Project in Camerino City is led by three officers, specifically hired for the ARCH Project: Matteo Iommi, Barbara Mastrocola and Quintilio Piattoni, under the supervision of the Urban and Building Planning Office (Barbara Mattei and Marco Orioli), the General Business Office (Francesco Aquili) and the Municipal Council (Riccardo Pennesi as representative).

All the tasks involved in the ARCH Project are carried out with the collaboration of the research partners (UNICAM, ENEA and INGV) and the facilitation provided by ICLEI.

#### 2.1. Existing capacity

Camerino's team involves different units and groups:

- Municipality of Camerino;
- UNICAM (University of Camerino);
- INGV (National Institute of Geology and Volcanology);
- ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development).

The Municipality of Camerino is represented by a Municipal Council member, Municipal Officials of three main sectors (public and private works, urban planning and cultural heritage) and their collaborators for the ARCH project.

Riccardo Pennesi	Municipal Council member	
Marco Orioli (supervisor)	Head Office - Public works (public construction)	
Quintilio Piattoni	Ph.D. Engineer (ARCH Project)	
Barbara Mattei (supervisor)	Head Office - Private works and urban planning	
Matteo Iommi	Ph.D. Architect (ARCH Project)	
Francesco M. Aquili (supervisor)	Head Office - General Business	
Barbara Mastrocola	Curator of Camerino Diocesan Museum (ARCH Project)	

Table 1. The municipal officials of Camerino.

The University of Camerino is represented by administrative officials, professors and researchers of three main areas of interest: diagnostic of artworks and cultural heritage, cultural heritage and GIS, structural engineering and geology.

Arianna Bartoletti	Administrative activities	Office staff member	
Annalisa Albanesi	cooperation Office	Office staff member	
Graziella Roselli	Diagnostics of artworks	Professor	
Giuseppe Di Girolami	and cultural heritage	Engineer	
Enrica Petrucci	Cultural heritage and GIS	Professor	

Diana Lapucci	]	Ph.D student	
Lucia Barchetta		Ph.D student	
Andrea Dall'Asta		Professor and ARCH Project Coordinator	
Alessandro Zona	Earthquake Engineering	Professor	
Michele Morici		Professor	
Marco Materazzi	Geology	Professor	

#### Table 2. Unicam's officials and researchers.

INGV's members are shown in the following table:

Costanzo Antonio	INGV
Buongiorno Fabrizia	INGV
Bignami Christian	INGV
Esposito Alessandra	INGV
Musacchio Massimo	INGV
Pannacione Apa Maria Ilaria	INGV

#### Table 3. INGV's members.

ENEA's members are shown in the following table:

Rosato Vittorio	ENEA
Giovinazzi Sonia	ENEA
Di Guglielmo Angelo	ENEA
Fioriti Vincenzo	ENEA
Giordano Ludovica	ENEA
Mirabile Gattia Daniele	ENEA
Mongelli Maria Luisa	ENEA
Persia Franca	ENEA
Roselli Ivan	ENEA
De Canio Gerardo	ENEA
De Nicola Antonio	ENEA
Di Pietro Antonio	ENEA
Falconi Luca	ENEA
Puglisi Claudio	ENEA
Sciortino Maurizio	ENEA
Villani Maria Luisa	ENEA

Table 4. ENEA's members.

#### 2.2. Capacity gaps

There is a lack of knowledge of the main features of the Old Town with reference to the main natural hazards and the vulnerability of the cultural heritage. The main extreme events occurred in the last years, such as the Central-Italy earthquake (2016) and heavy snowfalls (2017). These events highlighted the lack of a suitable pre-disaster planning in order to increment the resilience of the urban area. Currently, the main activities related to urban resilience are managed by the office for urban planning, by the office for the environment and public works, and by the local civil protection department. As mentioned earlier in Part 1, these departments face obstacles in particular to developing adequate pre-disaster planning, due to knowledge gaps, especially concerning detailed risk scenarios. The ARCH project will be useful in order to develop a possible permanent coordination between the municipal offices and some regional departments already involved as local stakeholders. In fact, the Civil Protection Department and the Special Office for the Rebuilding (USR) will support the municipality of Camerino in order to define the main vulnerabilities for the whole Old Town. Regarding climate related risks and in particular heavy snowfalls, there are no detailed historic records of meteorological data concerning detailed historic records. Weather data can be acquired from some weather stations in the nearest municipalities (the nearest being 12km away), covering wind speed, wind direction, air temperature, relative humidity, total solar radiation - dating from 1999 onwards, however this data is not accurate for the conditions in Camerino.

#### 2.3. Stakeholder analysis process and results

The Municipality of Camerino together with UNICAM's members have selected 20 local stakeholders, at national, regional and local levels, to take part in its local partnership for the ARCH project (Section 2.5 and Annex I). At a Local Launch Event held on 28<sup>th</sup> May 2020 these departments and groups received an introduction to the aims of the ARCH project for Camerino's Old Town, the scientific partners and the activities – as a first major step to engage them as stakeholders (see Annex 1: stakeholder analysis table).

After the Local Launch Event a preliminary calendar of meetings and activities (Section 4.2) was defined for the local stakeholders and the wider public.

The idea is that future meetings will allow to facilitate the data sharing to carry out the risk scenarios for the target area together with the engaged stakeholders. Furthermore, the public meetings will be useful in order to share both the aims and the results of the ARCH project's activities. The organisation of the meetings is led by the Municipality of Camerino and facilitated by UNICAM, thanks to their academic and institutional network. The Mayor and the Municipality council will be involved in public meetings. Starting from topics, objectives and related issues, a list of expertise has been defined and a research has been undertaken at the local, regional and national level to identify influential stakeholders. These have already been contacted to agree on the development of the research and to give contributions when necessary.

During the total lockdown months in Italy – due to COVID-19 pandemic – the municipal Office for the Environment and Public works together with ENEA's members carried out some online

meetings in order to try to involve some companies that manage local infrastructure located within Camerino's urban area (Local Network Systems in Camerino). Their possible engagement will be useful in order to use their information to develop risk scenarios on the local network systems. Currently, these companies are considering some features of possible future agreements with ENEA.

The stakeholders involved, together with ARCH Camerino team, are shown in Annex 1: stakeholder analysis matrix

#### 2.4. Existing groups and initiatives

At the regional level some institutions<sup>6</sup> have been identified with similar objectives and actions about urban resilience and cultural heritage preservation. Some of these institutions will be engaged as local partners (see Section 2.5). Furthermore, UNICAM is also involved in some relevant research projects concerning the assessment of the seismic vulnerabilities of public buildings and schools within the Marche Region, together with other research institutes. Considering the consolidated collaboration between the Municipality of Camerino and the local institutions, the ARCH project can be a useful opportunity to improve the current relationships.

#### 2.5. Our local partnership

As already mentioned, the core team is made up of officials of Municipality of Camerino, University of Camerino (UNICAM), the National Institute for Geophysics and Volcanology (INGV) and the Italian national Agency for new Technologies, Energy and Sustainable Economic Development (ENEA).

The local partners, also shown in Annex 1, are:

	MIBACT (Ministry for cultural heritage and activities and
National Level	tourism)
	National Civil Protection Dept.
	ANIDIS (National Associations for Earthquake Engineering)
	Carabinieri command for cultural heritage
	CERHER (Centre for the resilience of heritage sites)
	Superintendence of architectural and landscape heritage of
	Marche Region
	Marche Region
Regional Level	Hydrographic district of central Italy
	USR (Special Office for Reconstruction of Marche Region)
	ABAMC (Institute of Conservation of Marche Region)
	Order of Architects of Province of Macerata

<sup>&</sup>lt;sup>6</sup> Civil Protection Office of the Marche Region, the Special Office for the Reconstruction of the Marche Region, Superintendence of Architectural and Landscape Heritage of Marche Region and Institute of Conservation of Marche Region.

Local Level	Archdiocese of Camerino and San Severino Marche
	Civic-Diocesan Museums
	Local Civil Protection Department
	Permanent Consultation for Development
	GEOMORE (Geological modelling for risks and resources
	evaluation) Spin-off of UNICAM
	Camerino High Schools (Licei Varano di Camerino)
	Io Non Crollo (Local Private Association)
	Panta Rei (Local Private Association)
	Concentrico (Local Commitee)

Table 5. List of stakeholders.

## 3. Where are we going?

#### 3.1. Our overall aim

The overall aim is to mitigate the impact of natural hazards on the Old Town with an integrated approach, developing knowledge and tools for monitoring Camerino's cultural heritage and preparing it for future disasters.

Objectives

- 1. To improve predictive models and risk assessment methods to lead future actions for current post-earthquake reconstruction, in order to mitigate effects of future events and to enhance preparedness to natural hazards.
- 2. To increase knowledge on the geological-structural setting of the "Camerino hill" and the geomorphological processes determining the hydrogeological hazard.
- 3. To increase the knowledge of historic buildings' vulnerability with reference to construction materials and techniques.
- 4. To monitor significant cultural heritage sites in order to provide alerts and real-time information about damage due to natural hazards and degradation due to environmental conditions.

To develop guidelines for the managing and securing of artefacts and artworks after seismic events.

## 4. How will we get there?

#### 4.1. Work plan

The common topics and targets of the ARCH Project are transferred and applied in the Camerino city case, according to the specific context of Camerino, with a general framework with which all the activities, objectives and expected results are planned and managed. The work plan of Camerino city represents the reference structure in which Camerino, the research partners and local partners work together to achieve shared objectives.

Before the Local Launch Event (28 May, 2020), the municipality of Camerino contacted potential local partners in order to receive their preliminary feedback. Furthermore, during the national lockdown in early 2020 due to Covid-19, the Municipality of Camerino tried to contact some local network companies. This is still ongoing at the time of writing. During the Launch Event, both the main aims and the activities of the Camerino team as part of the ARCH project were described to the potential partners, including local institutions and associations.

The municipality of Camerino organised a 'match-making' meeting with ARCH scientific partners on 21 July, 2020 in order to describe the city's needs, to define the objectives and to discuss how the research partners will carry out the supporting activities. The meeting served to define a preliminary draft of the local work plan (see Annex 2).

Further details concerning the main activities and the involved scientific partners are reported in the following table.

The current local work plan matrix is attached to this document as Annex 2, where relevant strategies, actions, and indicators can be found. The work plan matrix will likely be updated during the project since priorities might change over the course of the project together with the local stakeholders (see initial attempt below).

#### 4.2. Activities to develop and implement your work plan

Camerino city is planning to organise meetings and workshops to carry on the work plan and to implement co-creation approach with the support of its local research partners and ICLEI. The aim of the all planned communication events is to dialogue with the local community, other institutions, stakeholders and other cities with relevant expertise with the hope to increase the resilience of our cultural heritage

In order to refine the work plan (and corresponding objectives), several meetings will be carried out both with the scientific partners, with the local partners and the community in order to receive their feedback and better understand their needs.

The following table summarises the main activities to be developed in relation to the local work in Camerino in the framework of the ARCH project.

Year	Milestone type	Objective	When	Target audience	Public or invitation only
2020	Launch Event	Presentation of the ARCH Project with the main aspects, topics and relevant issues to the local stakeholders.	May 28, 2020	All local partners and stakeholders	Invitation

Year	Milestone type	Objective	When	Target audience	Public or invitation only
2020	Match-making event and virtual visit	Discuss, review and confirm the work plan and the involved objectives	July 21,2020	Scientific partners and WPs' members	Invitation
2020	Online consultation	Inform stakeholders and local partners about advances on work plan and consult theme on related needs and interests	End November	End users to be identified	Invitation
2020	Online consultation	Publish online information about advances on local work plan and obtain feedback.	Early December	Public	Public
2021	Online consultation	Inform stakeholders and local partners about advances on work plan and consult theme on related needs and interests	End December	End users to be identified	invitation
2021	Launch action (open day at heritage site)	Launch local partnership and increase visibility within administration and wider community	Early February	Public	Public
2020- 2022	Stakeholder workshop meetings	Define needs for data management inventory	Every 4 months	End users to be identified	invitation
2021	Online consultation	Publish online information about advances on local work plan and obtain feedback.	Early June	Public	Public

Year	Milestone type	Objective	When	Target audience	Public or invitation only
2022	Update heritage management plan	Incorporate relevant ARCH findings	End May	N/A	N/A

Table7: Calendar of activities

#### 4.3. Strategy to collaborate with local partners

Since the beginning of the project, before the Local Launch Event (28<sup>th</sup> May, 2020) the municipality of Camerino contacted local stakeholders in order to prepare for the meeting and receive their preliminary feedback. During the total lockdown (March-June 2020) due to COVID-19, the Municipality of Camerino organised a Launch Event in May 2020; where the ARCH project was presented to local stakeholders. This online-meeting allowed including local institutions and associations, which shared their perspectives and views.

It is important to highlight that time spent on the stakeholder engagement in Camerino is conditioned by social distancing restrictions due to the COVID-19 pandemic at national level. In addition, Camerino is involved in complex activities related to the reconstruction of its municipal area due to the earthquake occurred in 2016. In spite of these difficulties, Camerino carried out both formal and informal online meetings with the local stakeholders and the scientific partners.

The Office for the Environment and the Public Works of Camerino is supporting the scientific partners in order to help the technical activities concerning the installation of monitoring systems.

Thus, several meetings will be carried out (see Table 7) to define the activities with the scientific partners and the local stakeholders, and to explain these to the local community.

The strategies to collaborate with the local partners will be based on the ARCH co-creation approach and on the mutual sharing of needs and feedback.

Furthermore, with the support of ICLEI, the Municipality of Camerino will organise online meetings with some other towns (keystone cities), that are involved in European research project concerning urban resilience strategies, in order to share best practices and expertise concerning the cultural heritage management and the strategies to increase the urban resilience of the municipal area against natural hazards.

#### 4.4. Checking and reporting on progress

Several meetings will be carried out both with the scientific partners and the local partners – and with the inhabitants. The number of meetings will be a possible indicator to monitor the sharing of the objectives and the needs with the involved partners and local community.

Another way to monitor the progress of the local partnership will be the amount of feedback received from local partners and/or the number of corrective actions to the activities.

The preliminary planning of the meetings with the local stakeholders (see Table 7) will be refined after the collection of the availabilities from the local partners in the proposed dates. The COVID-19 pandemic continues to make longer term planning difficult.

The meetings will be organised by different areas of interest and for each one the interested local partners will be involved.

For each meeting the agenda will be defined and it will be sent to the attendees; finally, the minutes will be carried out and uploaded in Confluence in order to inform the ARCH consortium's partners. During the online consultations, according to the above calendar of activities, the ARCH Local Partnerships self-assessment tool will be updated and shared.

Finally, information about public meetings and news will be published online in order to share the ongoing activities and results with the inhabitants and the local associations.





#### Annex 1: Stakeholder analysis table

Activity				
Sector	Organisation	Relationship with municipality (if any)	Information (what useful information can they provide?)	Impacts (how, if at all, are they impacted by the issue?)
Public body (regional level)	Special Office for Reconstruction Marche Region (USR)	The Special Office for Reconstruction Marche Region (USR) offers support and technical options that aims to ensure that the reconstruction activity is effective and based on principles of economy and efficiency. <u>http://www.regione.marche.it/Regione-Utile/Ricostruzione-Marche/Ufficio-speciale-ricostruzione-Marche</u>	The USR carries out, in cooperation with the Municipality, the urban planning connected to the reconstruction, also setting up urban planning instruments and the relative financial plans for the historical centres.	The technical solutions for reconstruction developed by the project would be an added value with which to integrate interventions on damaged buildings.
Public body (national level)	Ministry for Cultural Heritage and Activities and Tourism (MIBACT)	Public body hierarchically over-ordained to the Municipality in the field of culture and tourism. It is the highest public body, which manage the cultural heritage (its principal aim is to guarantee the protection and the valorisation of the Italian cultural heritage). http://www.beniculturali.it/mibac/export/MiBAC/index.html#&panel1-1	It provides information on culture-related national legislation, it provides grants, and it creates regional law and strategic documents.	The results of the technical analysis would be very useful to the public body for planning future projects
Public body (regional level)	Superintendence of Architectural and Landscape Heritage of Marche Region	Body superordinate to the Municipality in the protection and enhancement of historical and cultural artistic assets. The reconstruction / modification activities that the Municipality wants to carry out, which insist on buildings with artistic, historical and cultural restrictions, must have the clearance of the Superintendence. <u>http://sabapmarche.beniculturali.it/</u>	They are in possession of very detailed information concerning the historical artistic and cultural buildings of the whole regional territory, including those of the Municipality of Camerino.	The results of the technical analysis would be very useful to the public body for planning future projects.
Public body (local level)	Archdiocese of Camerino and San Severino Marche	Public body that values and protects religious movable and immovable cultural asset and organizes exhibitions of works of high artistic and religious value. http://www.arcidiocesicamerino.it/	It can provide useful information about cultural buildings and works that are in its property.	The results of the technical analyses would be very useful to the public body for planning a better protection plan for religious asset.
Public body (local level)	Civic and Diocesan Museum	It is the body which manage all Archdiocese of Camerino's works and pictures. <u>http://www.arcidiocesicamerino.it/index.php?option=com_content&amp;view=article&amp;id=21&amp;Itemid=204</u>	It can provide useful information about works and pictures managed.	The results of the technical analyses would be very useful to the public body for planning a better protection plan for religious asset.
Public body (local level)	Permanent Consultation for Development	It aims to individuate best strategies in order to promote local cultural, social and economic development. The Municipality of Camerino is one of its member. https://www.unicam.it/ateneo/organizzazione/consulta-territorio	They are in possession of very detailed information concerning the historical artistic and cultural buildings of the whole regional territory.	Thanks to the results, they will be able to plan future actions to keep their facilities operational in the case of natural disaster.
Public body (local level)	Camerino High Schools	https://liceicamerino.edu.it/	They participated to a national project PON FSE "Enhancement of cultural, artistic and landscape heritage", whose results could have interesting links with ARCH.	The results will be useful to educate young people about how to behave in the event of a natural disaster.
Public body – (Regional level)	Marche Region	Marche Region is an institutional body with administrative and legislative powers, taking into account many relevant features: geographic, historic cultural features <a href="https://www.regione.marche.it/Temi">https://www.regione.marche.it/Temi</a>	Marche Region provides directives, laws, regulations and guidelines for different sectors, in particular for building engineering, hydrogeological plans and cultural heritage	Cooperation with Marche Region can transfer results from the project to the regional policy level
Public body (national level)	National Civil Protection Department	It has a guiding role, in agreement with regional and local governments, of projects and activities for the prevention, forecast and monitoring of risks and intervention procedures that are common to the whole system. <u>http://www.protezionecivile.gov.it/home</u>	The Department coordinates the response to natural disasters, catastrophes or other events (event C type) that intensity and extent, should be faced with extraordinary powers and means. In agreement with regional governments and local authorities, working in the drafting of legislation on the prevention of risks and regulatory measures needed to cope with disaster and minimize damage to people and property.	The results of the technical analyses would be very useful to the public body for planning a better protection plan for the safety of population.
Spin-off of University of Camerino	GEOMORE (Geological modeling for risks and resources evaluation)	It carries out planning, forecasting and risk prevention analysis concerning geomorphological hazards <u>http://www.geomore.it/</u>	Information about: - prevention: it studies the causes of calamitous phenomena, it identifies risks as well as areas (of the territory) subject to the same risks; - planning: it develops hazards maps and gives its support to local administrations for their planning	The results of the technical analyses would be very useful to carried out future risk maps and scenarios.
Public body – regional level	Hydrographic District of central Italy	Hydrographic District of centre Italy is a non-economic public body, established by Legislative Decree 152/2006. It provide opinions and evaluations on the coherence of European, national, regional and local programmes with current governance frameworks, related to soil protection, desertification, water protection and management http://www.autoritadistrettoac.it	Information related to different risks, in particular about water and hazards. The Hydrographic District has information constantly updated about hydro-geological plans.	They are a public body with the task to concur on regulations and directives with availability to achieve data and technologies (satellite data, drones, climate data, etc)
Private body – National Association	ANIDIS (National association for earthquake engineering)	ANIDIS is a national association with the aim to: promote, encourage and spread in Italy the culture concerning seismic problems in the sectors: Structural Engineering, Geotechnics, Geology, Urban Planning, Architecture, Restoration, Civil Protection and Environmental Protection; establish and maintain national and international contacts between experts on seismic issues; to collaborate with Authorities and Institutions in the drafting of rules and regulations concerning seismic engineering. http://www.anidis.it/home/	Anidis collect many experiences about risks and hazards, in particular for seismic events, with an interdisciplinary approach. Anidis can provide information for the professional management and communication of results	They would be very useful to improve dissemination actions and to give feedback and references.



Activity				
Sector	Organisation	Relationship with municipality (if any)	Information (what useful information can they provide?)	Impac the is:
Private body - (national level)	Cerher (Centre for the resilience of heritage sites	CERHER is a centre for integration for the promotion of resilience of art cities at natural disasters in Umbria, Marche, and Tuscany. Cerher supports the recommendations contained within the Sendai Framework 2015-2030 and supports guidelines established by Charter of Rome on the Resilience of Art Cities to Natural Catastrophes 2016 http://www.cerher.org	Information for the management, conservation and enhancement of historic areas, buildings and movable cultural heritage	Expertis the obje artefacts
Public body – (Regional level)	ABAMC Institute for Conservation of Marche Region	Institute for Conservation of Marche Region is part of the ABAMC (Macerata Art Academy). It is a regional institutions with expertise on conservation and restoration of artworks and movable cultural heritage. https://www.abamc.it/istituto-di-restauro-delle-marche	It can provide knowledge and detailed information on criteria and methods for the conservation and management of movable cultural heritage.	Criteria databas preserva measure Camerir
Private – Citizen committee (local level)	Concentrico	Technical and legal support for the practices and projects that the Municipality will have to develop in securing the buildings and in the future phase of reconstruction of the City. <u>https://www.concentrico.info/drupal/</u>	Information for the preservation and reconstruction of the historic centre of Camerino, dialoguing with the citizens to inform them about administrative procedures and monitor the reconstruction phase.	The reside the dev aimed a
Private – Social citizen Association (local level)	IoNonCrollo	They organize social and cultural events in order to maintain and improve the collective relationships between the population. They raise funds (through events and the promotion of local products) for the construction of two buildings aimed at the whole community, which will be donated to the Municipality of Camerino. https://www.iononcrollo.org/	They have information on how the perception of the territory and the relationships between citizens have changed and evolved during and after the seismic events in central Italy.	The rest the dev aimed a
Public body - (local level)	Order of Architects of Macerata Province	This public body includes all the Architects of a sub-regional area (provincial) that comprises the Municipality of Camerino. These professionals will have an active role in the reconstruction phase. https://www.architettimacerata.it/	Information about the post-earthquake set of rules and related procedures for the reconstruction of the historic centre of Camerino	The res them for asset of
Public body - (National level)	Carabinieri Comand for cultural heritage	The Carabinieri Command for cultural heritage is a part of the Ministry for Cultural Heritage and Activities and Tourism and plays a role regarding the safety and protection of the national cultural heritage. The organizational chart foreseen, at central level, a Staff Office and an Operational Department (split into three Sections: Archaeology, Antique, Modern Art and Counterfeiting) and on a territorial level: 12 Branches with regional jurisdiction (Ancona for Marche Region) http://www.carabinieri.it/cittadino/tutela/patrimonio-culturale/introduzione	The main activities carried out by the unit include combating theft, illegal excavations of archaeological sites, as well as trafficking and counterfeiting of stolen property. Equal attention is paid to inspecting premises of antique dealers and to tracing and, possibly, returning stolen or illegally exported art pieces. Investigators manage such tasks by consulting the "database of stolen works of art", a comprehensive list available to civilians and to foreign police forces alike.	They ca practice heritage
Private – Social citizen Association (local level)	Panta Rei	Panta rei is a citizen association in Camerino with the aim to spread civics and social values. The association is in contact with the municipality to spread and enhance public events visibility.	The association promotes events, publications, articles about the Camerino lifestyle.	The rest for the c aimed a

## cts (how, if at all, are they impacted by sue?)

se and knowledge from CERHER would be useful for ective: Guidelines for the managing and securing of ts and artwork after seismic events

and methods from ABAMC will be useful for the se system with information about exhibition and vations criteria, major vulnerabilities and traceability res of the cultural heritage goods in the old town of ino.

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an provide useful information on methods and as to monitoring and tracing movable cultural e

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### Annex 2: Work plan matrix

Dverall aim: Mitigate the impact of natural hazards on small old town with an integrated approach, developing knowledge and tools for monitoring and preserving cultural heritage and preparing it for future disasters									
Objective 1: Improve predictive	e models and risk assessment m	nethods to lead future actions for current p	ost-earthquake reconstruc	tion, to mitigate effects of fut	ure events, raising awareness	to natural hazard	ls.		
Strategy	Indicator	Action within the strategy	Responsibility (lead/support)	Stakeholders involved (indicate whether local partner or other stakeholder)	Related plan, policy or strategy (existing or future)	Link to ARCH scientific partners' tasks (if known)	Implementation period	Status (for monitoring purposes)	Notes
Provide risk analysis tools and post-event scenarios based on information collected after recent events and including outcomes from actions related to Objective 2/3/4. Outcomes will be used both to improve the awareness of inhabitants and to promote coordination between actors, stakeholders and institutions.	At least, accessibility to simplified maps for post event scenarios through online database	Knowledge from past events. Reconnaissance of damages from the earthquake 2016 into the Old Town and tools to share the collected data	Lead: Municipality of Camerino Support: UNICAM	USR Marche Region (Special Office for Reconstruction)	Revision of the PRG (general master plan). New detailed urban plan of the Old Town. New strategic plan for reconstruction and development.		Nov 2019 - May 2020	Jan 2020: status control on complete survey data Apr 2020: status control on methods and tools for sharing collected data	
		Prediction models. Development of methodologies and tools for the risk assessment and post-event scenario prediction, based on available data, including data from monitoring.	Lead: UNICAM Support: Municipality of Camerino	National Civil Protection Reluis (Net of Earthquake Engineering Lab Consortium) Reluis (Net of Earthquake Engineering Lab Consortium) ANIDIS (National Associations for Earthquake Engineering)			Apr 2020 - Dec 2020	May 2020: status control on implementation Oct 2020: status control on implementation	
		Tools for planning. Synthetic documents (maps, indices) and guidelines to support the decision-making process concerning risk mitigation actions and criteria for post-event reconstruction.	Lead: UNICAM Support: Municipality of Camerino	Permanent Consultant of development Local Committee CONCENTRICO Local Private Association IoNonCrollo Marche Region			Oct 2020 - Mar 2021	Dec 2020: status control on implementation Feb 2021: proof	
		Communication. Effective communication actions, including a digital open database, oriented to improve inhabitant awareness about effective risk and potential preparedness actions	Lead: Municipality of Camerino Support: UNICAM, INGV	National Civil Protection Permanent Consultant of development Local Committee CONCENTRICO Local Private Association IoNonCrollo Italian Ministry of Cultural Heritage and Activities and Tourism (MiBACT) Superintendence of Archaeology, Fine Arts and Landscape (SABAP) Marche Region Government			Jul 2020 - Apr 2021	Oct 2020: status control on implementation Jan 2021: end of reviews from stakeholders and local partners Mar 2021: proof	
Objective 2: Increasing the kno	wledge on the geological-struct	tural setting of the "Camerino hill" and the	geomorphological process	es determining the hydrogeol	ogical hazard scenarios for th	e historical centre			
Strategy	Indicator	Action within the strategy	Responsibility (lead/support)	Stakeholders involved (indicate whether local partner or other stakeholder)	Related plan, policy or strategy (existing or future)	Link to ARCH scientific partners' tasks (if known)	Implementation period	Status (for monitoring purposes)	Notes

Organize, analyze and integrate the knowledge relating to the natural context, intended as the "basement" of the built-up system (i.e. geological bedrock) and as a set of geomorphological processes (landslides, floods, extreme climatic events) which can determine hazard conditions. The objective will be achieved in synergy with the actions and strategies of Objective 1	The reconstruction plan of Camerino takes geomorphological risks into account. GIS-based map of geomorphological processes and geological cross-sections showing the relationships between subsoil and built-up area	Collection, organization and analysis of subsoil geological data, with particular care to the presence of natural and anthropic cavities	Lead: UNICAM Support: Municipality of Camerino	GEOMORE s.r.l.	Third level seismic micro- zoning plan of the Municipality of Camerino. Plan Hydrogeological Asset (PAI) of the Marche Region. GIS platform of the Municipality of Camerino. Revision of the PRG (General Master Plan) of the Municipality of Camerino.		Jan 2020 - Dec 2020	Oct 2020: status control on complete data collection	
		Survey, analysis and modelling of geomorphological processes able of generating potential hazard conditions	Lead: UNICAM Support: Municipality of Camerino	Hydrographic District of central Italy Civil Protection Agency of the Marche Region			Apr 2020 - Jun 2021	Nov 2020: status control on surveys performed Apr 2021: status control on surveys performed	
		Providing, also through the execution of indirect investigations (geophysical prospects) along significant transects, indications and parameters useful for a correct definition of the local seismic response	Lead: UNICAM Support: INGV	GEOMORE s.r.l.			Jul 2020 - Aug 2021	Jan 2021_ status control on surveys performed Jun 2021_ status control on geophysical prospect analyses	
		Implementation of the GIS platform of the Municipality of Camerino with all the georeferenced data coming from the previous actions	Lead: UNICAM Support: Municipality of Camerino, INGV	GEOMORE s.r.l.			Jan 2020 - Sept 2021	Jan 2021: status control on data cataloguing and classification Jul 2021: status control on complete data collection	
Objective 3: Increasing the know	owledge of historical buildings v	ulnerability with reference to construction	materials and techniques						
Strategy	Indicator	Action within the strategy	Responsibility	Stakeholders involved	Related plan, policy or	Link to ARCH	Implementation period		
			(lead/support)	(indicate whether local partner or other stakeholder)	strategy (existing or future)	scientific partners' tasks (if known)		Status (for monitoring purposes)	Notes

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		Data acquisition on building materials: 1) Identification and geo-localization of materials sampling (mortars and stone / brick). 2) Description of sampling methods and analytical methods 3) Data collection-database ranges by type of analysis (basic analysis, in-depth analysis, measurements and direct observations).	Lead: UNICAM Support: ENEA, INGV	MIBACT (Ministry for Cultural Heritage and Activities, and Tourism)			Jun 2020 - Feb 2021	Sept 2020: Analysis of the preliminary outcomes from data acquisition on building materials. Dec 2020: Analysis of the preliminary outcomes from data acquisition on building materials.	
		Data processing from sampling: 1) Compilation of mortar sample data sheets to identify binder, aggregate, binder / aggregate ratio and correlation of mortar characteristics(chemical- physical-mechanical data) with the type of masonry and the damage detected after the earthquake. 2) Definition of the quality index for mortars	Lead: UNICAM Support: ENEA; Municipality of Camerino,	MIBACT (Ministry for Cultural Heritage and Activities, and Tourism)			Dec 2020 - Jul 2021	Mar 2021: Preliminary processing of data sampling. June 2021: Preliminary processing of data sampling.	
		Communication. Effective communication actions, including a digital open database, oriented to improve inhabitant awareness about effective risk and potential preparedness actions	Lead: UNICAM Support: Municipality of Camerino, INGV	Permanent Consultant of development. Local Committee CONCENTRICO. Local Private Association Io Non Crollo. Italian Ministry of Cultural Heritage and Activities and Tourism (MiBACT). Superintendence of Archaeology, Fine Arts and Landscape (SABAP). Marche Region			Dec 2020 - Sept 2021	Apr 2021: Status control on implementation. Jul 2021: End of reviews from stakeholders and local partners.	
Objective 4: Monitoring of cult	ural heritage with a significant v	alue in order to provide alerts and real-tin	ne information about dama	age due to natural hazards and	l degradation due to environ	nental conditions			
Strategy	Indicator	Action within the strategy	Responsibility (lead/support)	Stakeholders involved (indicate whether local partner or other stakeholder)	Related plan, policy or strategy (existing or future)	Link to ARCH scientific partners' tasks (if known)	Implementation period	Status (for monitoring purposes)	Notes
Provide guidelines for alert and safeguard monitoring systems for natural hazards based on real-time data collection. Two case studies will be considered for the implementation: Ducal Palace and Santa Maria in Via. Monitored parameters will include both mechanical	All the monitoring stations are designed and installed in the two case studies: Santa Maria in Via Church and Ducal Palace. Data collection begins and is made accessible through remote connection	Design of a dedicated monitoring-alert system based on real-time continuous acquisition of selected mechanical and environmental parameters to safeguard cultural heritage with specific reference to seismic hazard	Lead: UNICAM Support: INGV; ENEA; Municipality of Camerino	Archdiocese of Camerino and Camerino Civic Museum. Superintendence of Architectural and Landscape Heritage of Marche Region (SABAP)			Aug 2020 - Feb 2021	Nov 2020: Analysis of the monitoring schemes for the two case studies (Ducal Palace and S. Maria in Via)	
quantities and environmental quantities in order to discern between variations of mechanical response due to environmental changes and variations of the mechanical response due to damage or progressive degradation. The actual implementation of the		Installation and evaluation of a permanent monitoring-alert system in the Ducal Palace case study, to support the decision making about retrofit and preservation actions, including collection of information for improving the efficiency of emergency actions (e.g. rescue of artworks)	Lead: UNICAM Support: INGV; ENEA	Superintendence of Architectural and Landscape Heritage of Marche Region (SABAP)			Dec 2020 - Jun 2021	Mar 2021: Analysis of the preliminary outcomes of the monitoring system installed in Ducal Palace	
designed monitoring system		Installation and evaluation of a permanent monitoring-alert system in	Lead: UNICAM Support: INGV; ENEA	Archdiocese of Camerino and Camerino Civic			Feb 2020 - Jul 2021	May 2021: Analysis of the preliminary outcomes of the	

will highlight possible difficulties and critical aspects that must be considered in this kind of application in cultural heritage threatened by seismic hazard		the Santa Maria in Via case study, to support the decision making about retrofit and preservation actions, including collection of information for improving the efficiency of emergency actions (e.g. rescue of artworks)		Museum. Superintendence of Architectural and Landscape Heritage of Marche Region (SABAP)				monitoring system installed in Santa Maria in Via		
Objective 5: Guidelines for the	e managing and securing of arte	facts and artwork after seismic events								
Strategy	Indicator	Action within the strategy	Responsibility (lead/support)	Stakeholders involved (indicate whether local partner or other stakeholder)	Related plan, policy or strategy (existing or future)	Link to ARCH scientific partners' tasks (if known)	Implementation period	Status (for monitoring purposes)	Notes	
Definition of guidelines and procedures necessary for managing and securing of art craft and artwork exposed to climate and seismic hazard	Five monitoring indoor environmental stations (for temperature, moisture and lighting measures) are installed. One VOC's monitoring station is installed One bioluminometer device. Conservation assessment sheets of artworks.	Mapping of cultural heritage goods into the Old Town, providing a database system with information about exhibition and preservations criteria, major vulnerabilities and traceability measures	Lead: Municipality of Camerino Support: UNICAM; ENEA, INGV	Archdiocese of Camerino and Camerino Civic Museum. Superintendence of Architectural and Landscape Heritage of Marche Region (SABAP)	Project for the creation of a Centre of excellence on diagnostics. Legislative Decree 22 January 2004, n. 42 (Code of cultural heritage and landscape). Circular 31/2012 Annexes Legislative Decree 165/2001 (MIBACT		Apr 2020 - Nov 2020	Oct 2020: heritage mapping		
			Analysis of suitable and effective sites for the recovery in case of disasters. Identification of the critical issues and estimation of the desired ones to ensure safety in the event of natural disasters (transport, storage conditions, emergency deposit characteristics)	Lead: Municipality of Camerino Support: UNICAM; ENEA	Archdiocese of Camerino and Camerino Civic Museum. Superintendence of Architectural and Landscape Heritage of Marche Region (SABAP). Italian Ministry of Cultural Heritage and Activities and Tourism (MiBACT).	guidelines and procedures for the management of the safeguarding of cultural heritage following emergency events). Memorandum of understanding between Mibact and the Fire Brigade of 7 March 2012.		Aug 2020 - Mar 2021	Feb 2021: Site analysis	
		Assessment model for the historic- economic-social value of the existing cultural heritage giving priority ranks	Lead: Municipality of Camerino Support: UNICAM; ENEA, INGV	Camerino High Schools. Camerino Civic Museum. Architectural and Landscape Heritage of Marche Region (SABAP).	of 7 March 2012. Circular no. 24/2012 (The Ministry's General Secretariat coordinates the activities of the crisis units activated at the Mibac Regional Departments on the occasion of emergency events). circular n. 38/2012 (Procedure for the management of the emergency activities of the UCCR-MiBACT Crisis Unit). DDG 30/11/2016 Rep 651 (Methodological and technical guidelines for the reconstruction of the cultural heritage damaged by the earthquake of 24		Dec 2020 - Jun 2021	May 2021: evaluation model		

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