



Co-funded by  
the European Union



PROCULTHER-NET  
PROTECTING CULTURAL HERITAGE  
FROM THE CONSEQUENCES OF DISASTERS - NETWORK

# TECHNICAL BULLETIN

ISSUE #1. March 2023

Union  
Civil Protection  
Knowledge Network



©PROCULTHER-NET Project  
Technical Bulletin

**Technical Coordination:** *Constance Domenech de Cellès, German Archaeological Institute, and Romain Kimmel, Ministère de l'Intérieur-Direction générale de la sécurité civile et de la gestion de crises- France*

**Proof-reading:** *Maria Bongi, Italian Civil Protection Department*

**Graphic design:** *Federico Brozzetti, PROCULTHER-NET IT Expert and Graphic Designer, Fondazione Hallgarten-Franchetti Centro Studi Villa Montesca*

**Graphic and editing supervision:** *Simone Sbarsi, PROCULTHER-NET C&V Expert, Fondazione Hallgarten-Franchetti Centro Studi Villa Montesca*

[proculther-net@protezionecivile.it](mailto:proculther-net@protezionecivile.it)

© This publication is available in Open Access [on the Union Civil Protection Knowledge Network](#) under the Attribution-Non-Commercial-Share Alike 4.0 International (CC BY-NC-SA 4.0) license (<https://creativecommons.org/licenses/by-nc-sa/4.0/>). It may be reproduced in whole or in part provided that the source is mentioned as follows: PROCULTHER-NET Project. Technical Bulletin N. 1, March 2023.

# IN THIS ISSUE

<b>IN THIS ISSUE</b> .....	3
<b>LIST OF AUTHORS</b> .....	4
<b>THE PROJECT</b> .....	5
<b>FOREWORD</b> .....	6
<b>INTRODUCTION</b> .....	7
<b>PREVENTION</b>	
Gathering indigenous knowledge to mitigate climate crisis – ICCROM-FAR’s Net Zero: Heritage for Climate Action.....	9
<b>PREPAREDNESS</b>	
Historic centres and seismic risk: census, mapping and exposure assessment .....	16
Providing first-aid to movable cultural heritage: a modular table system .....	19
From vision to reality – the Cologne Container for the protection of cultural heritage .....	24
Security depots for the storage of movable cultural heritage assets in emergencies .....	30
<b>RESPONSE</b>	
The Safeguarding Action Plan for Cathedrals.....	35
<b>RECOVERY</b>	
Project for the conservation and relocation of the Tomb Zeynel Bey in Hasankeyf .....	39
<b>FOCUS ON</b>	
Including cultural heritage protection among the immediate needs in case of emergency: the role of the Union Civil Protection Mechanism.....	46
Towards the development of European capacities for the protection of cultural heritage at risk: the “Key Elements of a European Methodology to Address the Protection of Cultural Heritage during Emergencies” .....	51
“KulturGutRetter (KGR): technical characteristics of a cultural heritage response unit” .....	58
<b>LIST OF REFERENCES</b> .....	65

# LIST OF AUTHORS

List of authors (in order of appearance):

**FOREWORD.** *Felix Bloch, Directorate-General for European Civil Protection and Humanitarian Aid Operations - ECHO*

**INTRODUCTION.** *PROCULTHER-NET Consortium*

## PREVENTION

**Gathering indigenous knowledge to mitigate climate crisis – ICCROM-FAR’s Net Zero: Heritage for Climate Action,** *Jui Ambani and Mohona Chakraborty, International Centre for the Study of the Preservation and Restoration of Cultural Property - ICCROM*

## PREPAREDNESS

**Historic centres and seismic risk: census, mapping and exposure assessment,** *Pierluigi Cara and Cosmo Mercuri, Italian Civil Protection Department - DPC*

**Providing first-aid to movable cultural heritage: a modular table system,** *Inga Vollmer-Bardelli, KulturGutRetter, LEIZA*

**From vision to reality – the Cologne Container for the protection of cultural heritage,** *Dr. Ulrich Fischer and Nadine Thiel, Historical Archive of the City of Cologne*

**Security depots for the storage of movable cultural heritage assets in emergencies,** *Marica Mercalli, Ministry of Culture of Italy*

## RESPONSE

**The Safeguarding Action Plan for Cathedrals** *Dominique Jager, Directorate General of Cultural Heritage and Architecture, Ministry of Culture of France*

## RECOVERY

**Project for the conservation and relocation of the Tomb Zeynel Bey in Hasankeyf,** *Ph.D. Serap Sevgi and Murat Çetin, Ministry of Culture and Tourism, General Directorate of Cultural Assets and Museums of Türkiye*

## FOCUS ON

**Including cultural heritage protection among the immediate needs in case of emergency: the role of the Union Civil Protection Mechanism,** *Giovanni De Siervo - DPC, and Tiziana Vicario - Fondazione Hallgarten-Franchetti Centro Studi Villa Montesca - FCSVM*

**Towards the development of European capacities for the protection of cultural heritage at risk: the “Key Elements of a European Methodology to Address the Protection of Cultural Heritage during Emergencies”,** *Veronica Piacentini - DPC and Tiziana Vicario - FCSVM*

**“KulturGutRetter (KGR): technical characteristics of a cultural heritage response unit”,** *Constance Domenech de Cellès - German Archaeological Institute, and Nils Jakubeit - Federal Agency for Technical Relief*

# THE PROJECT



**PROCULTHER-NET** is **co-funded** by the Directorate-General for European Civil Protection and Humanitarian Aid Operations - **DG-ECHO** under the European Union Civil Protection Mechanism - **UCPM**, and implemented by a **Consortium** led by the Italian Civil Protection Department (**Italy**) in collaboration with the International Centre for the Study of Preservation and Restoration of Cultural Property - **ICCROM**, the Ministry of Interior-Disaster and Emergency Management

Authority - AFAD (**Turkey**), the German Archaeological Institute - DAI (**Germany**), the Ministère de l'Intérieur - Direction Générale de la Sécurité Civile et de la Gestion des Crises (**France**), the Fondazione Hallgarten - Franchetti Centro Studi **Villa Montesca**, the Ministry of Culture and Tourism of the Region Government of Castilla y León (**Spain**), the Federal Agency for Technical Relief - THW (**Germany**) and the Suor Orsola Benincasa University - UNISOB (**Italy**) and the University of Porto - UPORTO (**Portugal**).

Building on **PROCULTHER** project, whose it is a natural continuation, **PROCULTHER-NET** is running from **January 2022** to **June 2023** and aims at consolidating a **thematic community** focused on the **protection** of **cultural heritage** at risk of disaster within the **Union Civil Protection Knowledge Network - KN** and increasing **UCPM interoperability standards** by reinforcing **know-how transfer** and learning processes on the **inclusion of cultural heritage protection in disaster risk management** processes within the **KN**.

[\*Click here\*](#) to join the KN and find out more on **PROCULTHER-NET!**

*"The content of this publication represents the views of the authors' only and is their sole responsibility. The European Commission does not accept any responsibility for any use that may be made of the information it contains."*

# FOREWORD



*By Felix Bloch, Head of Unit, Directorate-General for European Civil Protection and Humanitarian Aid Operations - ECHO, Disaster Preparedness and Prevention, Knowledge Network and Evidence-Based Policy (ECHO.B.3)*

I am delighted to introduce the first Technical Bulletin published by the PROCULTHER-NET consortium. As one of the Union Civil Protection Knowledge Network projects pioneering the development of “thematic communities”, PROCULTHER-NET has focused its energy on a community for ‘Cultural Heritage in Disaster Risk Management’. It’s an example of a stakeholder driven activity, bringing together diverse groups from the field of cultural heritage and disaster risk management to work together in identifying and addressing specific needs.

6

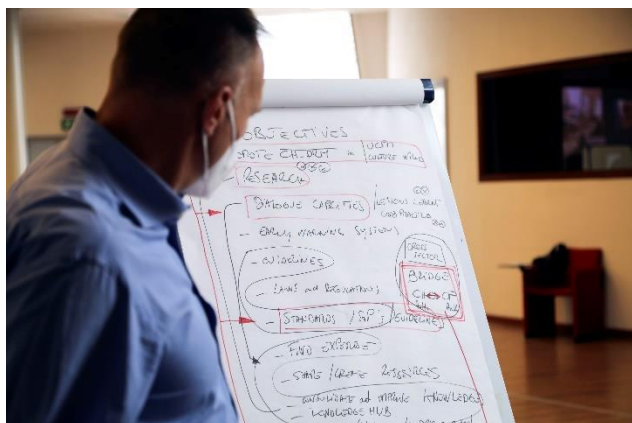
This technical bulletin from PROCULTHER-NET will regularly bring you the recent developments in the protection of cultural heritage in disaster risk management. This first edition showcases good practices and technical solutions for the preservation of cultural heritage during crises and addresses the bigger questions on the place of preservation of cultural heritage within disaster risk management.

The diversity of the organisations contributing to this bulletin not only shows the high level of interest in the topic of cultural heritage in disaster risk management, but also highlights once more the need to provide a common space in which cross border and cross sectorial cooperation on specific issues can take place. As the Union Civil Protection Knowledge Network evolves into the hub for actors in disaster risk management - DRM to organise around thematic areas of interest in civil protection, we look to stakeholder-driven initiatives such as the PROCULTHER-NET to bring the thematic communities to life.

Make the most of this technical bulletin. Use it to find out more about what your colleagues are doing on cultural heritage in the Union Civil Protection Mechanism - UCPM, and to discover more ways to be active in the Knowledge Network community.

# INTRODUCTION

By PROCULTHER-NET Project Consortium



*Brainstorming during PROCULTHER-NET Initial Planning Meeting, September 2022 Rome @ DPC*

Addressing the inclusion of cultural heritage protection in the disaster risk management process demands a modification of existing strategies and approaches of many institutions and actors working in this field. It is about laying the foundations for a constructive exchange on how to build and consolidate know-how and learning processes; it is about defining methods to constantly capitalise on acquired experience and expertise to better protect cultural heritage at risk.

This technical bulletin is the tangible proof of the interest that the Union Civil Protection Mechanism-UCPM, its participating States, as well as the Union Civil Protection Knowledge Network- KN devote to promoting the creation and sharing of technical and operational knowledge of both cultural heritage and civil protection authorities and agencies.

This technical bulletin is a first concrete result of the potential expressed by the PROCULTHER-NET project in consolidating a thematic community focused on the protection of cultural heritage at risk of disaster within the Union's Civil Protection Knowledge Network, with the aim of ensuring the appropriate inclusion of cultural heritage protection in disaster risk management processes at national and European level.

In particular, while Türkiye and Syria are still recovering from the devastating impact of the earthquake that has affected their population since 6 February, also in the field of the protection of cultural heritage, this bulletin reports a strong testimony on the valuable competence developed by one of these countries in this thematic field. The article developed by the experts of the Turkish Ministry of Culture on the “Project for the Conservation and Relocation of the Tomb Zeynel Bey in Hasankeyf” is a key example of how a strong human action can serve to effectively protect people and cultural heritage, ensuring the adoption of sustainable build back better approach in the recovery phase.

In order to make a substantial contribution to strengthening the protection of cultural heritage at risk, the bulletin aims to cover all phases of disaster risk management with both a phase-specific and mainstreamed approach. In particular, under the section **PREVENTION**, ICCROM proposes important inputs on “Gathering indigenous knowledge to mitigate climate crisis – ICCROM-FAR’s Net Zero: Heritage for Climate Action”.

The **PREPAREDNESS** section introduces tools developed in Italy for mapping historic centres from seismic risk. In the same section, a particular focus is dedicated to the protection of movable cultural heritage – be it archives, graphic arts, objects, furniture, paintings, sculptures, books... – from a German point of view with an article on “Providing first-aid to movable cultural heritage: a modular table system” and a case study dedicated to the experience of Cologne in

this field, “From vision to reality – the Cologne Container for the protection of cultural heritage”. Insights on how to store and protect movable cultural heritage are offered by Italy in the “Guidelines for the identification, adaptation, design and setting up of depots for the temporary storage of movable cultural assets including annexed restoration laboratories”.

Under **RESPONSE** we share the lessons learnt from France on the "security/safety" action plan for cathedrals, showcased as a major tool for a better response from all stakeholders to emerging risks and threats.



*Team Charlie on the field during the Protecting Cultural Heritage Course (Italy, March 2023) © DPC*

For this bulletin edition, the mainstreaming section (**FOCUS ON**) is dedicated to the “European coordination”, the importance of which is explained in three articles exploring the various facets of this theme: at national-level between cultural institutions and civil protection, while upholding European and international standards; between partner countries within the PROCULTHER project (2019-2021), finding common ground despite national specificities and differences; and at the European level with the integration of a cultural heritage module in the framework of the UCPM.

Common standards stand at the heart of international collaboration. They include joint procedures, a shared language and compatible tools. Although bringing the worlds of cultural heritage and civil protection together – and having them agree on mutual processes – may remain a challenge within some national contexts, the European level provides a valuable space for experimentation to test innovative approaches and define new best practices that can then be cascaded downstream and upstream, towards the national and international levels.

These three examples are important milestones on the road to the integration of cultural heritage protection and civil protection.



# PREVENTION

## Gathering indigenous knowledge to mitigate climate crisis – ICCROM-FAR’s Net Zero: Heritage for Climate Action

---

*Authors: Jui Ambani and Mohona Chakraburty, Programme Assistant, First Aid and Resilience for Cultural Heritage in Times of Crisis (FAR) Programme, ICCROM*

From widespread floods drowning cities in Pakistan, Bangladesh and China to crop-withering droughts in East Africa, intensifying wildfires in the United States and record temperatures in India, Brazil and Europe, combined with extreme storms pummeling coastlines in the Philippines, Yemen and Tuvalu, climate shocks have left no corner untouched. Some of these catastrophes hit with blinding speed, others unfolded over many months, making it tougher to protect vulnerable heritage and knowledge bearers.

The effects of global climate variability and change are disrupting the lives, livelihoods, and cultures of millions of people, driving forced migrations, giving rise to new tensions, and aggravating existing conflicts. Rising sea levels may cause the disappearance of the world’s most iconic historic sites and cities. Floods, fires and droughts not only threaten material and natural heritage, but also pose great risk to intangible heritage, making vital resources in form of practices, sacred sites, plant and animal species, inaccessible. However, cultural heritage can also be a powerful tool for climate change mitigation and adaptation.

At the same time, relapsing conflicts and the unending COVID-19 Pandemic have dealt the largest blow to risk-reduction efforts made in the past three decades, limiting the prioritization of a net zero future in major recovery efforts. One of the most devastating impacts of the climate crisis, is the unprecedented human displacement as recorded in the [2021 Global Report on Internal Displacement](#)<sup>1</sup>. It points to a definite cause and effect relationship between climate change, conflicts, disasters and human displacement. The report acknowledges that not all conflicts and disasters can be directly related to climate change, however, there seems to be a worrying trend indicating that all drivers of human displacement – conflict, fragility, resource scarcity, natural hazards, and climate change – are colliding to create a downward spiral of vulnerability and risk.

---

*Indigenous knowledge and practices developed through human-earth interactions over time, offer pathways for climate change adaptation and mitigation, disaster risk reduction and peacebuilding.*

---

However, despite such advances, the extent to which cultural heritage can help inform strategies for climate resilience, is not sufficiently recognized in the wider practice. Furthermore, decision-makers and practitioners in the relevant fields do not fully understand

---

<sup>1</sup> Internal displacement in a changing climate (IDMC), *Global Report on Internal Displacement*. 2021. <https://www.internal-displacement.org/publications/2021-global-report-on-internal-displacement>

climate change related risks to heritage and people. There is a dearth of knowledge and tools for: assessing climate risks, tapping into community-held knowledge and cross-linking data sets across fields.

With an aim to bridge this gap and leverage indigenous knowledge and local practices on climate change mitigation and adaptation, as well as reduce the risks of disasters and conflicts, "[Net Zero: Heritage for Climate Action](#)", a first-of-its-kind capacity development project was conceived within the framework of ICCROM’s First Aid and Resilience for Cultural Heritage in Times of Crisis ([FAR](#)) programme, with the generous support of the [Swedish Postcode Foundation](#).

**Net Zero** is rooted in the idea that every place has a ‘climate story’, embedded in its cultural heritage i.e., the records of how humans coped with climate variability, adapted lifeways and sustained natural resources.

Using indigenous knowledge and traditional practices, teams at 5 climate hotspots will reduce:

- ✓ the risks of drought- and flood-related disasters
- ✓ food insecurity
- ✓ environmental degradation
- ✓ carbon emissions
- ✓ forced migration
- ✓ conflict over resources
- ✓ extreme heat events

net0

This cultural record supplements the existing scientific data and is the missing link in effective risk management of climate change.

The Project has engaged five multidisciplinary teams and communities to develop and field-test viable climate solutions founded on indigenous knowledge and backed by science at 5 climate hotspots - Brazil, Egypt, India, Sudan, and Uganda.

One of the aims of the Project is to enhance risk reduction and coping capacities of vulnerable heritage communities.

In this way, the Project will address the interconnected issue of heritage safeguard, decarbonising, upholding cultural rights and sustainable development of vulnerable cultural bearers, as well as effecting change locally, while strengthening efforts globally.

Net Zero: Heritage for Climate Action is comprised of four phases:

- Phase 1: Situation analysis and data gathering (Ongoing)
- Phase 2: In-person workshop (Upcoming: April 2023)
- Phase 3: Implementation of mitigation and adaptation strategies
- Phase 4: International symposium and dissemination of results

To ensure robust and inclusive research, each team is allocated a seed grant and is assisted by a 'Sherpa' who monitors progress, helps summarize data and identify gaps, as well as liaises with the ICCROM-FAR team to promote the work being done at the innovation sites.

In the ongoing first phase, each team will develop a 'climate story' for their respective sites, highlighting the root causes of the prevalent climate-related risk, assessing the sustainability of the identified indigenous knowledge to mitigate risk in different climate change scenarios, as well as the potential of these solutions to promote peace, justice and resilience in and around the site.

In sewing together oral histories from source communities and the scientific desk study, the teams are developing the climate stories for their respective sites.

These stories will narrate the evolution of the climate and landscape of each site from an era of cottage industries and subsistence living to the current times of large-scale industries and rapid consumption. It will also study the hazard patterns since industrialization and track the urbanization rate and influx of development policies and actions to draw a cause-effect chain.

Finally, teams will be able to identify the root causes of climate-related risks at their sites and tap into appropriate indigenous knowledge to adapt to and mitigate such risks.

[Meet the five Net Zero innovation sites!](#)



Ubatuba, Brazil. Source: UNICAMP

### Site 1: Ubatuba, BRAZIL

Ubatuba in Brazil is a **natural reserve** near São Paulo - one of the most populous cities of the Americas and a bustling business hub. Rich in water resources, Ubatuba is predominantly covered by the Atlantic rain forest and is bordered by 100 km of coast. This project will tap into the knowledge held by the marginalized local **Quilombola** communities on **preserving crop diversity** in the Ubatuba. Through verifiable research, the project team will **develop inventory systems** and seedling

banks of native species **to mitigate food insecurity**.

#### Leading Team:

- The Public Archaeology Laboratory (LAP) at the Centre for Environmental Studies and Research at the University State of Campinas ([UNICAMP](#)).

#### Supporting Partners:

- Representatives of the Quilombola community
- International Council on Monuments and Sites (ICOMOS)-Brazil Climate Change and Heritage Committee
- The Secretariat of Agriculture and Supply of the State of São Paulo (IAC)
- The Centro Nacional de Monitoramento e Alertas de Desastres Naturais - CEMADEN
- The State University of Goiás' history department.



Rosetta, Egypt. Source: EHRF

### Site 2: Rosetta, EGYPT

Rosetta, or Rashid, is a **port city** on the Nile Delta and a World Heritage Site. Rosetta is known as the place where the Rosetta Stone was found. Today, the city is affected by a rising sea level and increased salinity of the river water. This project will document and analyze the **vernacular architectural practices** and **traditional ways of fishing** to reduce the impacts of climate change on the lives and livelihoods of the local community.

#### Leading Team:

- Egyptian Heritage Rescue Foundation ([EHRF](#))

### Supporting Partners:

- Cairo University’s Community and Environmental section
- National Authority for Remote Sensing in Egypt
- Organizations of fishermen in Egyptian port cities - Rosetta, Alexandria, Damietta and Port Said



*Jodhpur, India. Source: CRRP*

### Site 3: Jodhpur, INDIA

Jodhpur is the **second-largest city** in the Indian state of Rajasthan and is a popular **tourist destination** featuring magnificent palaces, forts and temples. Set in the stark landscape of the Thar Desert, the city is characterized by a **hot, arid climate** due to its very high potential for evaporation of water and depletion of groundwater. It faces the compounding climate-related risks of cyclic droughts, extreme heat and

building water stress. At the same time, increased mining activities have blocked catchment areas and the diversion of sewage lines into freshwater reservoirs has polluted them.

The team of emerging professionals from the in India will study the **vernacular architectural practices and traditional water management systems** to modify extreme temperatures, protect citizens from solar radiation and cope with water scarcity. The project aims to use the project’s findings to **build a culturally-sensitive Heat Action Plan (HAP)** for the city of Jodhpur.

### Leading Team:

- Confederation of Risk Reduction Professionals ([CRRP](#))

### Supporting Partners:

- Risk & Resilience Institute ([RRI](#))
- Mahila Housing Trust (MHT)
- National Research Development Corporation (NRDC)
- Local municipal corporations of Jodhpur



*Tuti Island, Sudan. Source: SUDTT*

#### Site 4: Tuti Island, SUDAN

Tuti Island is situated at the confluence of the **White and Blue Nile** in Sudan and is surrounded by **the metropolises** - Khartoum, Omdurman and Khartoum North. In recent decades, the island has experienced **increased temperatures**, prolonged **droughts** and **irregular rainfall patterns**, as well as **cyclic floods** and **sea level rise**. This has changed the land formation, destroyed cultivable lands and

displaced millions. This project is working to enhance the existing **community-led early warning system – Taya** – in Tuti Island by cross-linking local knowledge with modern technology. Through the project, the team will create a localized and comprehensive **forecasting system** in and around the island to mitigate flood impacts.

#### Leading Team:

- Sudan Urban Development Think Tank ([SUDTT](#))

#### Supporting Partners:

- Studio Urban
- University of Khartoum
- Resurgence
- United Nations Development Programme (UNDP)



*River Kabiri, Uganda. Source: CCFU*

#### Site 5: Kasese, UGANDA

River Kabiri flows through Uganda’s **Kasese district**, between the Ekyisalhalha Kya Kororo **sacred cultural site** and the boundary of the **Rwenzori Mountains National Park**, a World Heritage Site. In the last decade, **destructive flooding of River Kabiri**, induced by irregular rainfall patterns and the rapidly melting glaciers of the Rwenzori Mountains, have disrupted the lives and livelihoods of lowland communities,

such as the **Bakonzó**. Industries and hydropower dams have caused soil extraction and land reformations, changing the natural course of the river. The project team will tap into the Bakonzó community’s knowledge and experiences to plant and preserve **native plant species** to **maximize carbon sequestration**, **control riverbank erosion** and **improve biodiversity** in the region.

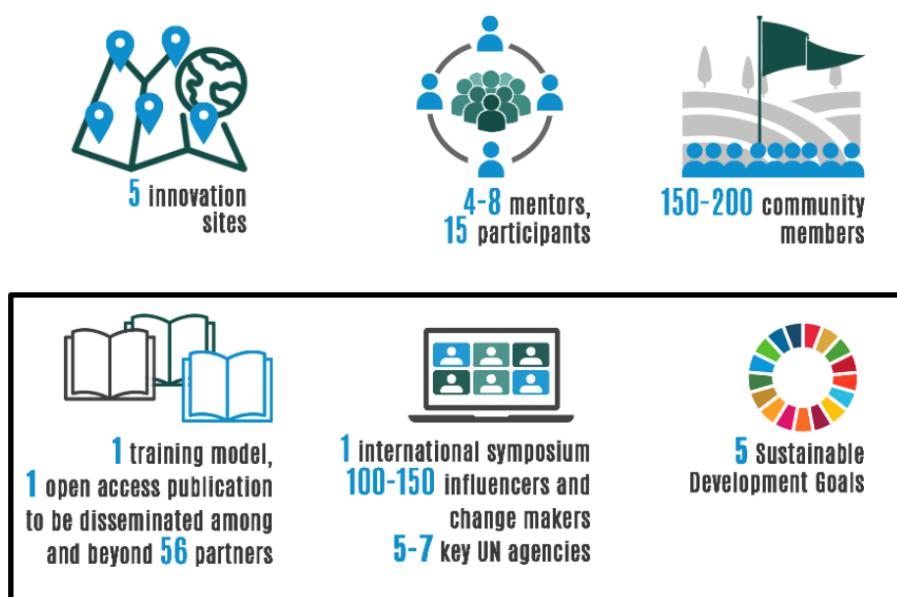
### Leading Team:

- Cross-Cultural Foundation of Uganda ([CCFU](#))

### Supporting Partners:

- Leaders from the Bakonzo community
- Kasese District Local Government Authority
- The cultural institution of the Bakonzo (Obusinga Bwa Rwenzururu)
- Uganda Wildlife Authority (UWA)

### What's next?



Upon the successful completion of the field- and desk-based research in Phase 1, the ICCROM-FAR team – together with a team of multidisciplinary area specialists and the Sherpas – will review the climate stories and analyze the findings to develop the curriculum for an in-person workshop (Phase 2). During the workshop, these climate stories will help develop mitigation and adaptation strategies, which will be field-tested in Phase 3. In the final phase, Phase 4, the results of the entire Net Zero project will be disseminated at an online, international symposium which will engage ICCROM’s partners from Net Zero and [Climate.Culture.Peace.](#), as well as an open access publication to advocate for the inclusion of culture in global climate action.

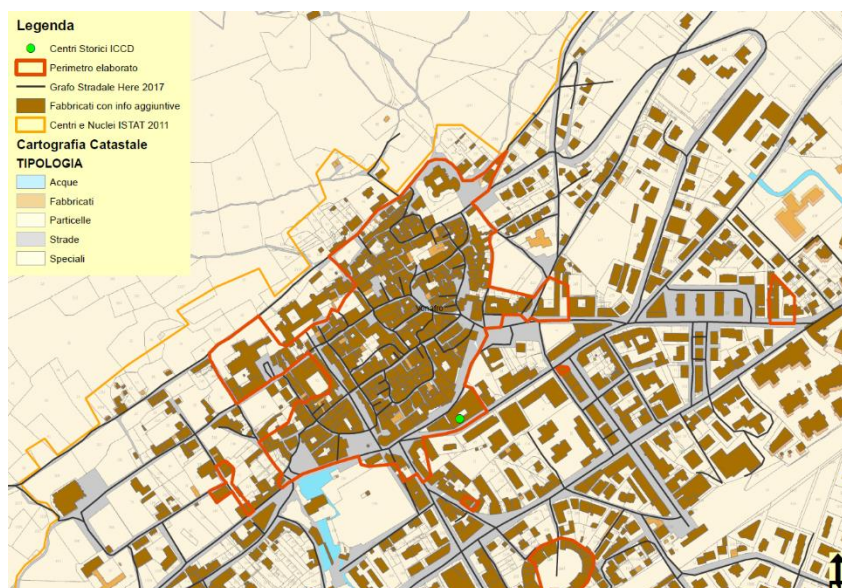
Stay tuned for further discoveries from the innovation sites.

# PREPAREDNESS

## Historic centres and seismic risk: census, mapping and exposure assessment

*Authors: Pierluigi Cara, Geologist and Cosmo Mercuri, Architect, Italian Civil Protection Department*

The Italian Civil Protection Department and the Central Institute for Cataloguing and Documentation (ICCD) of the Ministry of Culture (MIC) have launched a collaboration under the PON Project called "Digital Paths" <sup>2</sup>, on the specific topic of cataloguing the historic centres of the Basilicata, Calabria, Campania and Apulia regions. The collaboration is part of a previous and broader cooperation between the DPC and MIC on the topic of management and development of databases of common interest for the coordination of post-emergency interventions on cultural heritage, now regulated in a specifically dedicated Technical Table. In fact, since 1999, the DPC has implemented the Web System "Historic Centres and Seismic Risk (CSRS)" and related database, through which it focuses particularly on the historic centres, considered as a set of existing buildings and monumental emergencies, particularly exposed to the risk of loss upon the occurrence of seismic events. <sup>3</sup>



*Town centre of Venafro (IS) in the Molise Region: detailed cadastral mapping focused at the "historic" settlement.  
Scale 1:5,000*

*(Source: Territorio Italia 2021 - Agenzia delle Entrate p.137 Figure 8 - produced by the author)*

<sup>2</sup> The "Digital Paths" Project promoted by ICCD and funded by the European Regional Development Fund through the PON Culture and Development 2014/2020, is finalized to documentation, cataloguing and enhancement of the territories of 4 Regions of southern Italy. The project is divided into a series of activities that have the common goal of reconnecting a multiplicity of assets on the territory through the organization of digital tourist itineraries that include known or lesser-known destinations in the geographical area affected by the PON (see <http://www.iccd.beniculturali.it/it/150/archivio-news/5173/nasce-il-progetto-pon-itinerari-digitali>). Among the six strands of activity, the collaboration with the DPC concerned that relating to the census through expeditious cataloguing of the Historic Centres.

<sup>3</sup> The Web System CSRS is based on the database of the CSRS WEB datasheet, which engineered the model proposed in the Atlas of historic centres exposed to seismic risk" created in collaboration with the Department of Design and Study of Architecture of University of Roma Tre.



This collaboration, launched in April 2021, is aimed at maximizing interdisciplinary exchange and operation in the field among the actors involved, through the experimental application of the methodology developed by the DPC as per the delimitation of historic centres (see figure below).

Furthermore, in order to facilitate the work by referring to a common basis, it was also agreed to use part of the information on historic centres already available in the CSRS system.

Since the application of the methodology for the delimitation of historic centres is based on the use of vectoral cadastral cartography integrated with data from the Cadastre of Buildings, the involvement of the Central Directorate of Cadastral, Cartographic and Real Estate Publicity Services of the Italian Agency of Revenue was also necessary. The request was made by the DPC in application of the Agreement signed between the two administrations in 2016, precisely providing for the provision of cadastral cartographic data in connection with the management of emergency events, for exercises and for civil protection planning needs. In relation to the content of the Technical Annex of the Prime Minister's Directive of April 30, 2021 on "Guidelines for the preparation of civil protection plans at different territorial levels," the delimitation of historic centres and aggregates concurs in the identification of exposed assets for the purpose of defining scenarios for each type of risk. Therefore, the request for cadastral data for the purpose of collaboration between DPC and ICCD was justified by planning requirements.

Finally, the activity carried out contributes to the consolidation of the thematic community envisaged by the European Project ProCultHer-NET<sup>4</sup> (of which DPC is the Coordinator), on the safeguarding of cultural heritage at risk in the event of disasters, specifically regarding the tools and methodologies for the knowledge and mapping of cultural heritage at risk.

### Open Data

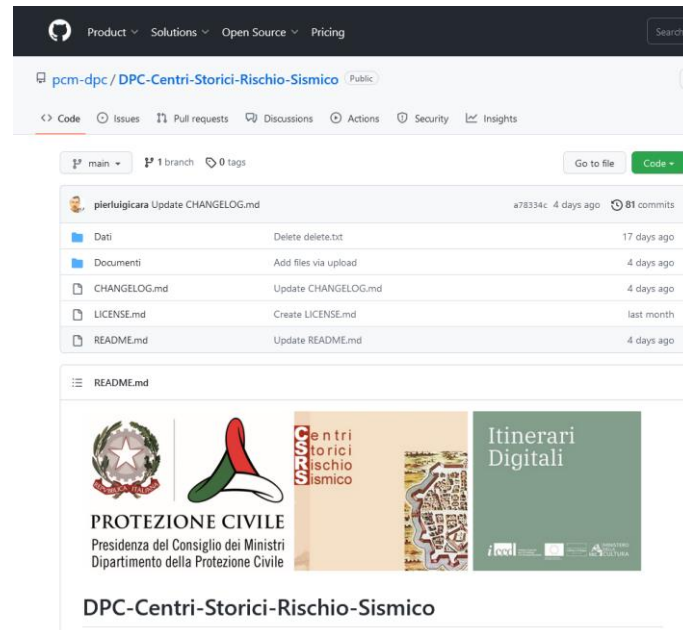
The work carried out by the DPC as part of the aforementioned collaboration with the ICCD resulted in two datasets:

- Areas with a high concentration of ancient (pre-1945) buildings of historical interest;
- Location of historic centres and settlements.

The datasets created, shared between DPC and ICCD as part of their collaboration, were also published as open data to allow for the widest reuse. In fact, a repository has been made public in the Github platform <https://github.com/pcm-dpc/DPC-Centri-Storici-Rischio-Sismico> which contains the data for download and all the documentation necessary to facilitate the understanding and use of the data. Within that documentation, metadata conforming to the directions of Directive 2007/2/EC "Inspire" and Open Geospatial Consortium - OGC Standard Network Services are highlighted.

---

<sup>4</sup> <https://civil-protection-knowledge-network.europa.eu/projects/proculther-net> is the follow-up to the project ProCultHer- Protecting cultural heritage from the consequences of the disaster (<https://www.proculther.eu>)



Public repository of open data on Italian historic centres of the Department of Civil Protection  
(Source: screenshot of portion of the homepage produced by the authors)

## Conclusions

The work carried out represents an important achievement for the purpose of knowledge, protection and enhancement of cultural heritage. Indeed, historic centres located within the manmade landscape are of fundamental importance from the historical, cultural and social point of view, due to the specific concentration of all the above aspects that they represent. Moreover, from a civil protection point of view, the same concentration can become an element of specific vulnerability and exposure to natural and anthropogenic hazards, and as such in need of protection. It is important, therefore, that the study of historic centres has contextually taken into account both the cultural component (represented by the Institute for Cataloguing and Documentation of the Ministry of Culture) and the civil protection component (represented by the Department of Civil Protection), precisely through the collaboration of both bodies.

A geographical mapping of historic centres, moreover, is clearly at the heart of the cognitive process described earlier. It is also important that such mapping be accurately detailed and high quality, and that it is produced in digital form. The geographic data describing the mapping, for their "high value", must therefore adhere to those basic principles defined FAIR<sup>5</sup> to ensure that the (digital) data are: *Findable, Accessible, Interoperable and Re-usable*. In the work, all these characteristics have been ensured, as can be seen (in more detail), in the open data publishing platform that has been set up, and in the extensive descriptive documentation accompanying the data itself, also published in the same platform. The availability of the data as *Open Data*, as also provided for in the recent Directive No.1024/2019, facilitates their reuse for cultural heritage impact assessments as, for example, during emergency management by infrastructures such as Copernicus Emergency Management Services.

<sup>5</sup> <https://force11.org/info/the-fair-data-principles>

# PREPAREDNESS

## Providing first-aid to movable cultural heritage: a modular table system

---

*Author: Inga Vollmer-Bardelli, Conservator for Archaeological Heritage - KulturGutRetter, LEIZA*

Due to its long-time and worldwide acknowledged expertise in the fields of restoration and conservation, the [Leibniz Centre for Archaeology](#) (LEIZA, formerly Roman-Germanic Central Museum) has been charged within the project “[KulturGutRetter \(KGR\) - Cultural Heritage Response Unit](#)”<sup>6</sup> with the development and testing of a modular, light transportable and scalable table system that can provide first-aid for movable cultural heritage during all phases of a crisis situation.

Based on scientific emergency concepts, the modular table system allows to document, clean and stabilize every single object, and to prepare it for the transport and the storage. All these tasks need to be accomplished according to minimal standard procedures, which define the operating workflow and the specific treatment for each material to be followed by every rescuer.

The multifunctional rescue modules are used as mobile laboratories and represent different steps in the process chain for the first-aid for movable heritage, such as documenting, cleaning and packaging.

The basic module consists of a simple table with castors made of anodized aluminium and represents the frame of each rescue module. The work surface of the basic module is adjustable and can be extended by lining up several basic module tables, thus providing a specific workstation. In addition, the basic module is adaptable for every use at each station, for example as an IT desk, a placement area for items during the first-aid process, or an additional workstation at the packaging module. If turned upside down, the basic module also fulfils the function of a transport trolley for the delivery of movable cultural heritage.

The rescue modules can be assembled by anyone in just a few steps following specific assembly instructions by using a hexagon socket screw key. Every specific module is designed for the different steps in the first-aid chain, such as wet and dry cleaning and packaging. Therefore, each basic module is provided with a corresponding setup for the associated equipment.

---

<sup>6</sup> See more information about KulturGutRetter in the article “KulturGutRetter (KGR): technical characteristics of a cultural heritage response unit”, p. 58 of Technical Bulletin #1



*Basic module, front view ©Inga Vollmer-Bardelli, LEIZA*

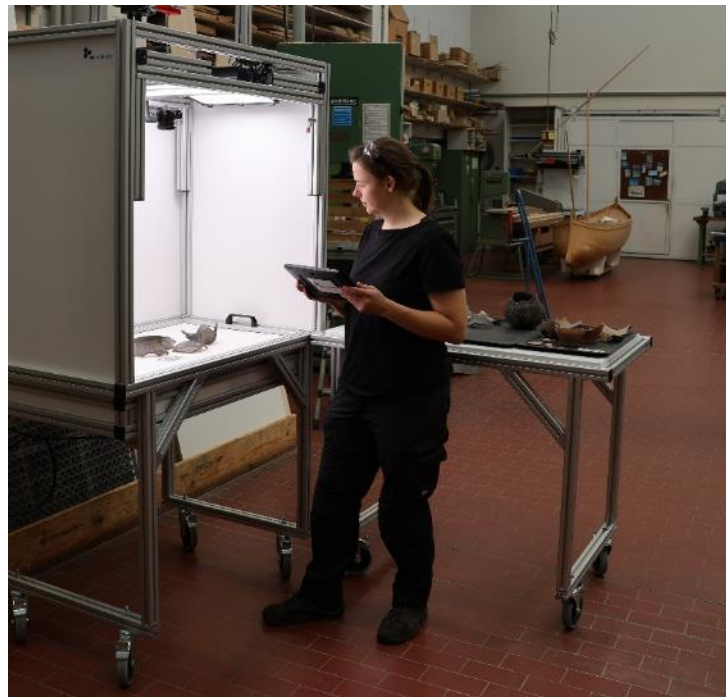


*Transport trolley for the delivery ©Inga Vollmer-Bardelli, LEIZA*

The photo module is featured with a photo camera as well as with a transmitted and incident light. The module is closed on the sides and on the back wall in order to reduce the external light. It is used to document the condition of each item before and after stabilization treatments.



*Photo documentation ©Inga Vollmer-Bardelli, LEIZA*



*Photo module with basic module ©Inga Vollmer-Bardelli, LEIZA*

The wet cleaning module is used to clean objects that have already become wet, for example due to a flood disaster or caused by extinguishing water in case of fire. Dirt and other impurities are removed from the objects with the help of a sprinkler head or by spraying water with compressed air. If water accumulates in the cavities of the surface of the item, it can be removed

by using compressed air available on the module. For this purpose, the wet cleaning module is additionally equipped with a compressor on an external supply unit. The water for the wet cleaning module is drained off through a drain or collected in a tank. In this case, the working surface consists of recessed perforated plates with a rubber mat on top. After cleaning, wet items are placed for draining on the so-called draining module, which differs in its structure only for the absence of splash guards and the water connection.

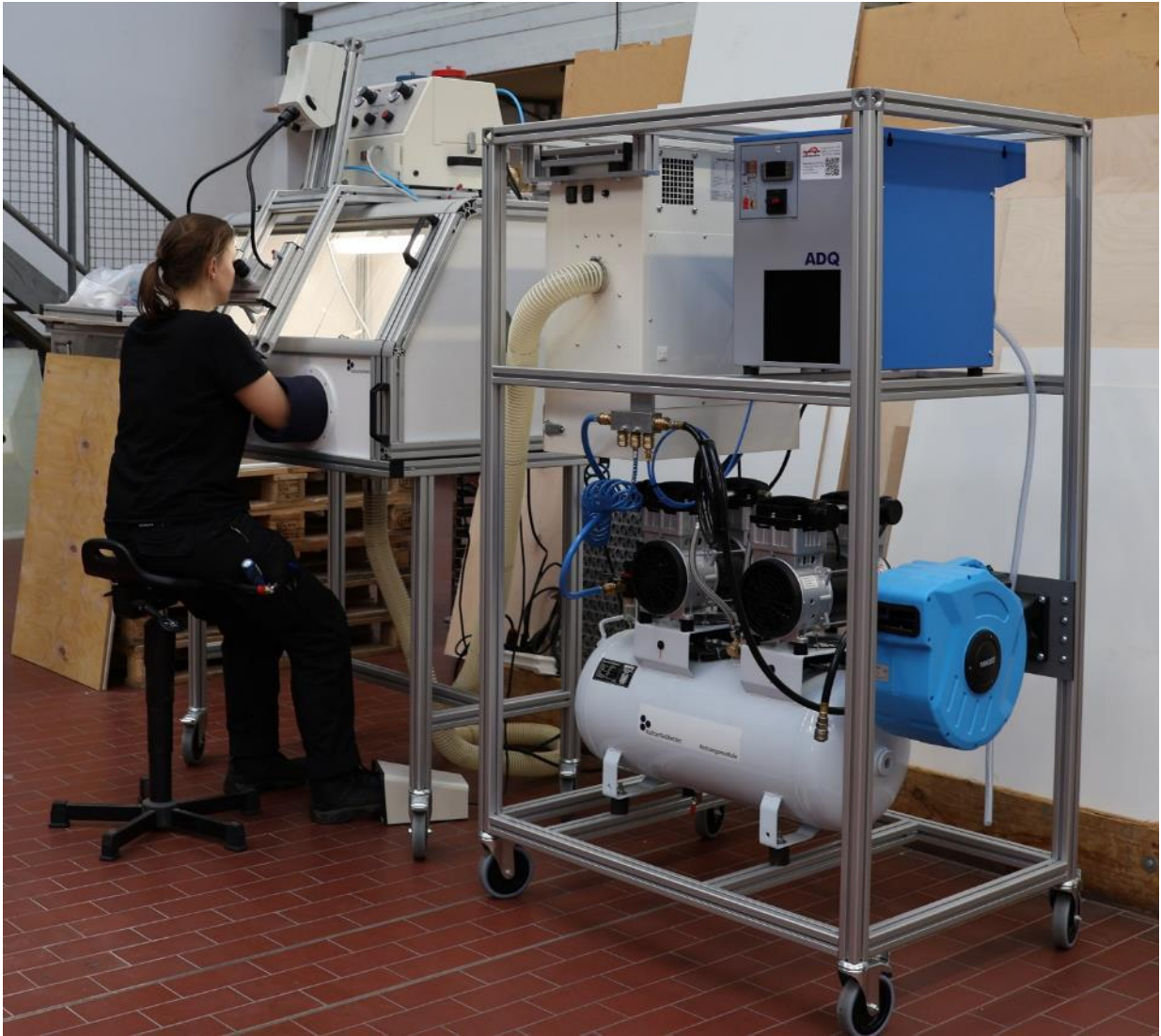


*Wet-cleaning module with drainer  
©Inga Vollmer-Bardelli, LEIZA*



*Cleaning a ceramic sherd by spraying water with compressed air  
©Inga Vollmer-Bardelli, LEIZA*

The dry-cleaning module is designed as a closed cabin and featured with an external suction and filter unit. With the aid of a vacuum cleaner and soft goat hair brushes the object surface is carefully freed from dust or soot. Only in special cases a micro-fine blasting unit can also be used to carefully clean particularly fragile objects with soft blasting agents. The closed system of the safety cabin prevents the uncontrolled spread of dust. Especially items contaminated with mould or biocide from natural historical, ethnological and medical collections can thus be cleaned in a controlled manner.



*Dry-cleaning module with supply unit ©Inga Vollmer-Bardelli, LEIZA*

The packaging module is the largest unit among the rescue modules and is composed of at least three basic modules. The middle module above the worktop is featured with four under-table unwinders for the various packaging material. The outer modules are clipped to the middle module by means of metal springs. Both outer modules have two compartments, which offer space for cut foam mats, containers, cardboard boxes, and absorber material as well. It is also possible to seal up metal objects in gas-barrier bags. Further workplace can be added at any time by joining other modules to the sides.



*Workplace for sealing metal objects in gas-barrier bags @Inga Vollmer-Bardelli, LEIZA*



*Basic module, disassembled @Inga Vollmer-Bardelli, LEIZA*

When disassembled, all rescue modules fit into an EUR-pallet compatible aluminium box. In this way, the modules will be stored at the project partner, the [Federal Agency for Technical Relief](#) (Technisches Hilfswerk – THW), until they will be needed. THW undertakes technical-humanitarian missions in crisis areas and after natural disasters in Germany and abroad. It is an important partner for the KulturGutRetter.

THW provides the necessary infrastructure at the site of operation, such as tents, electricity, water, and, after a request for help, fly the equipment together with the rescue modules to the crisis site.

In October 2021, the rescue modules were tested for the first time abroad during a workshop on emergency planning held in Khartoum at the National Museum of Sudan and at the world heritage site of the Meroë Pyramids. The local staff was trained in Minimal Standard Procedures in order to safeguard the collections at the National Museum and the Meroë Pyramids also in case of natural disasters. After the workshop the KulturGutRetter donated the mobile laboratory to the National Museum of Sudan, as a first step towards the construction of a modern restoration laboratory.

Further tests will take place this year with the main project partners, the [German Archaeological Institute](#) (DAI), THW and LEIZA in order to simulate critical scenarios and to train the first-aid procedure in case of an emergency.

# PREPAREDNESS

## From vision to reality – the Cologne Container for the protection of cultural heritage

---

*Author: Dr. Ulrich Fischer, Deputy Head of Archive, City of Cologne and Nadine Thiel, Head of Conservation, Historical Archive of the City of Cologne*

When, in 2009, the building of the historical archives of the city of Cologne collapsed due to construction deficiencies during the building of an underground line. The rescuers involved in the salvaging process would have wished for a dedicated, well-equipped space for emergency treatment and documentation of the archive material that needed to be recovered from the rubble of the building. As more and more files, charters, plans, posters and photographic items emerged, this need became ever more prevalent until a system was set up that relied on workspaces hastily set up in the windy courtyard of an old school building. It was here that triage was carried out and that wet items were washed using garden equipment acquired from a local DIY store.

Again, when in 2018 fire broke out in the Palácio de São Cristóvão in Rio de Janeiro, site of the National Museum, curators and restorers who had been able to snatch a few items on their way out of the building had no space to deal with this material – nor with any other that was salvaged later from the ashes. Although experts were ready to begin emergency treatment very soon after the fire, it was a matter of weeks before the infrastructure needed for this process was established close to the site of the disaster. True, this was also a consequence of the complicated situation with the structural faults and the decisions concerning the conservation of the remainder of the building. But still, a conservation space for emergency treatment to all items recovered from the disaster was not available, and it would have made a difference. In short, what was lacking in these and numerous other calamities was a sort of ambulance for items of cultural heritage that were salvaged or recovered and needed emergency treatment, stabilisation, possibly documentation before being ferried off to await proper conservation work.

In 2019, a year after the Cologne Emergency Association of Archives and Library had finally been established, circumstances allowed us to reconsider the idea of an “ambulance” for cultural heritage items threatened by disaster. Until then, the Emergency Association had been relying on pretty much the standard equipment of German emergency associations. There were tents, in which workplaces could be set up for triage, emergency cleaning, packing and rudimentary documentation for books, archival items or any kind of movable cultural assets. The material packed in metal boxes was mainly the same that had been used almost a decade earlier – garden hoses, trestle tables and items intended for personal protection: suits, rubber boots, gloves and the like. Neither did these working places conform to occupational health and safety regulations, nor could they be set up in a matter of minutes at the disaster site. It was, in short, a far cry from an “ambulance” for the emergency treatment and stabilisation of cultural heritage.

With funds available for projects promoting the modernisation of the city administration the opportunity arose for the Emergency Association to develop a state-of-the-art emergency system for stabilising and documenting fragile items in case of disaster in any of the 25-member



institutions. From the outset, conservators worked together with professionals from the city fire brigade, as the aim was to create an “ambulance” for the contents of archives and libraries that would conform to fire brigade standards. Under these circumstances, the fire brigade itself promised to look after the designated vehicle and its deployment to the site. They would also set it up so conservators, archivists, librarians and volunteers would be able to start their work immediately.



*Roll-off container for the protection of cultural assets  
being unloaded from the interchangeable loader  
© City of Cologne*

As using a **box truck** on a heavy-duty vehicle would pose numerous problems (frequent, expensive controls and service intervals, and a considerable difference in height between the workspace and the floor) the decision was quickly reached that a container would be the ideal space for work places. Not only do German fire brigades operate numerous containers of this type for a variety of purposes (ABC-contamination, mobile labs, kitchens etc.), they also hold any number of special Heavy Goods Vehicles – HGVs that can pick up and transport this type of container. Also, should the fire brigades not be available for transport (e.g., in the case of widespread disasters), this type of container can be transported with standard swap-body vehicle which are used by all emergency services, the military and even commercial haulage companies. Furthermore, the annual inspection of the container is a quick and simple affair involving visual control only. On the inside annual exercises help to ensure

that everything is working and the container is stocked as planned. This is a stark contrast to motorised vehicles or even trailers which need to undergo intensive functional checks and costly services at regular intervals.

The decision for a container system also determined the size and maximum weight of the container. When finally built, the container was 6.9 m long, 2.50 m wide and just as high, with an internal height of more than 2 m, offering plenty of headroom even for taller operators. Fully equipped its weight amounted to 8.5 metric tons. A standard clamp on the container can be used for the hook on the swap-body vehicle to lift the container; two little wheels on the rear side of the container facilitate the process of lifting and deposing.

There is plenty of experience from past emergencies proving how quick reaction and stabilising work is most important in the case of a disaster involving cultural heritage assets. Thus, the container was not designed to be a mobile conservation lab. Instead, the focus was on the

processes of triage, emergency documentation, dry cleaning, and, first and foremost, on rinsing of wet material and its preparation for rapid freezing. It was clear that with floods, fires (quenching water) and even after structural failures of buildings (earthquakes etc.) it is more than likely that at least some material will be wet. In most cases, immediate freezing is the adequate treatment to prevent the development of mould and further damage to the items. Before freezing, rinsing with clean water is the best preparation of already wet, soiled items, as it removes the materials from it (earth, brick, and concrete rubble) that will pose a problem in the process of freeze-drying.

The container was planned to enable these processes almost immediately after arrival at the disaster scene, in any surroundings and also in case of adverse weather conditions. A heating system is included, as are awnings to allow a protected approach to the container.



*Picture with a drone: On the European Days of Conservation Restoration, the roll-off container was presented to the public at the Heumarkt in Cologne. The photo shows a typical setup of the roll-off container with the tents and the fire brigade's command @ City of Cologne*

The container is designed to be hooked up to any type of hydrant or other source of clean water. It can run on normal electricity (220 V), but the fire engine usually accompanying the container also has a generator that can be used to provide the necessary energy. The container also contains a mobile internet station.

Inside, it provides adequate working space for up to eight people. Not all of these need to be trained conservators. Volunteers, who have so often played a major role in the emergency treatment of cultural assets, can also be brought in. It is our experience from the disasters at Cologne and, just recently, after the floods in Western Germany in 2021, that they can help with everything, except for the most advanced processes. Necessary items for personal protection are stocked in the container.



*First aid in the roll-off container of the recovered assets from the Stolberg city archives by restorers from the Cologne city archives and spontaneous helpers © City of Cologne*



*Restorer from the Cologne City Archive cleaning damaged graphics from the Bad Neuenahr-Ahrweiler City Museum ©City of Cologne*

Finally, the container is equipped to hold all the material necessary for the emergency treatment including personal protection for those involved in the process. Moreover, it also holds two tents (3x3m, 2 m high on the inside) which can be used to extend the area available for emergency treatment. For this extension, wheeled lattice boxes stored in the container hold further equipment hoses and everything else needed to process damaged items of cultural heritage. The tents provide working space for another six to eight helpers, if they are also used for rinsing or dry cleaning.



*First aid of the recovered assets from the Bad Neuenahr-Ahrweiler City Museum © City of Cologne*

The Emergency Association of Cologne Archives and Libraries was only able to acquire this sophisticated piece of equipment because funds were available from a number of sources. First of all, the institutions themselves were able to provide roughly one third of the initial costs of c. 150.000 EUR. 40.000 EUR were made available through the federal programme for the conservation of written cultural heritage (KEK), while a foundation connected to local bank was able to provide another 10.000 EUR. The last third was funded through a programme of administrative modernisation set up by the City of Cologne.

While the presentation of the container, intended to be a public event in a central square of the city, had to be cancelled because of the pandemic situation, it was, unfortunately used as intended in the summer of 2021. In July, 2021, torrential rain in western Germany and neighbouring regions led to widespread flooding. The town of Stolberg close to Aachen was particularly affected, with the town archives finding all their storage facilities completely inundated and the material wet and soiled. The emergency association and the fire brigade decided to offer help. In the end, the container was sent to Stolberg, where members of the emergency association and local volunteers spent a week processing the contents of one storage and preparing them for freezing. A few weeks later, items from a storage facility of a museum of the town of Ahrweiler was transported to Cologne using a vehicle specially designed for the transportation of cultural assets and operated by the Weimar fire brigade. This material was also treated in the container before being shipped to freezing facilities or museums and labs for specialised treatment.

In both these cases the container and its contents proved to be extremely helpful for a quick response to a disaster involving cultural assets. It provided a self-sufficient unit offering

everything needed for the emergency treatment of cultural heritage. It can be used on site and off site, and it can be seamlessly integrated into any salvage and rescue effort. Cooperation with the fire brigades facilitates its inclusion into the existing system of search and rescue efforts. As it ties in with existing logistics of emergency service providers, using the container reduces the extra work for the forces already deployed.

The first proper missions also revealed some aspects in which the container could still be improved. Among other things, the internal drainage system was altered, some additional storage was included and the container was fitted with a levelling system facilitating its use on an uneven surface. The most important change, however, took place on the inside, where additional facilities for rinsing were added and the entire concept was changed towards an even more flexible use of the available space. Two more tents were added to provide additional storage and handling space. This improvement was made possible by the generous funding of the Ministry of Culture and Science of the state of Northrhine-Westfalia.

Currently, the available work spaces outside the container are being improved, as four additional modular tables (70 cm x 100 cm) made from aluminium and stainless steel have been added. They are also carried on the container in two additional wheeled lattice boxes and provide additional working space for any process. These tables can be modified for a variety of processes and are equipped according to the logistics systems and norms of emergency service providers (e.g., Storz couplings, dimensionally stable hoses (DN 50) with drain sockets).

Also, the first seminars and training sessions with the container have taken place in and around Cologne. In 2023, the second seminar organised with Blue Shield Germany and the Cologne Institute of Conservation Sciences will take place. It aims at providing first-hand experience to prospective conservators and members of other professions from the cultural sector.

Over the past year, the container has been put through additional tests, and the emergency association together with the fire department are working to adjust deployment planning to make most use of capabilities of this system. At the same time, it became clear that the Cologne container had also addressed a relevant point in national and international emergency planning and strategies for the protection of cultural heritage. As it has been realised for Cologne, it is currently of interest for a number of federal states who aim to acquire several similar systems. Neighbouring countries (France and Poland, just to name two) also expressed an interest into building or acquiring such containers for their respective agencies for the protection of cultural heritage.

But with the presentation of the container at last year's MUTEK fair in Leipzig (where it won a gold medal as part of the exhibition stand of the German Association of Restorers) and with several other contacts that were made it became clear, that this container has yet another function. It shows that the vision of an "ambulance" for cultural assets can become reality. It is our hope that this example may be an inspiration to others to think about systems for the treatment of endangered or damaged cultural heritage that suit their specific requirements. Our contacts with colleagues in the Caribbean, who were thinking about a version that can be transported by air may be the next ones to take this kind of step.

# PREPAREDNESS

## Security depots for the storage of movable cultural heritage assets in emergencies

---

*Author: Marica Mercalli, Ministry of Culture, Director General Cultural Heritage Security*

*This article is a summary of the introduction to the [“Guidelines for the identification, adaptation, design and setting up of depots for the temporary storage of movable cultural assets including annexed restoration laboratories”](#) currently under publication.*

The frequent disasters striking Italian territory have created a constant 'state of emergency' for the country. The damage in terms of cultural heritage losses, both mobile and immovable is huge, as are the economic resources needed for the safeguard and securing operations, restoration and reconstruction.

The most appropriate definition for cultural heritage is fragile; a precious treasure that we inherit, which we have the duty to hand down to future generations for the inestimable value it holds, ranging from historical, artistic, religious and civil. It is our history dating back to our ancient past expressed through assets and objects of every nature and use, often yielding unique and unrepeatable masterpieces.

Today more than ever, prevention is the approach needed to implement every long-term protective action in the face of potential devastating events, often unpredictable, caused by human actions or natural calamities. The experience gained in the recent seismic emergencies that we have had to face and that we are bound to face again due to the nature of our country's territory, today allows us to draw from a deep and consolidated knowledge, at least from the point of view of technical skills and conservation measures.

Having depots to store movable artworks in case of emergency that provide adequate performance levels in terms of safety and conservation is crucial in emergency management operations. These secure warehouses for movable assets represent an essential safeguard measure in areas hit by disaster events /emergency situations caused by natural calamities (earthquakes, floods, landslides, to name the main ones).

During the last major earthquake of 2016, that struck four different regions of central Italy: Abruzzo, Lazio, Marche and Umbria, as already in the previous emergency of Abruzzo (2009) and Emilia Romagna (2012), the presence of specific equipped areas, providing storage for the artworks removed from the rubble of the collapsed buildings, made it possible to operate not only for their conservation, but also to immediately start the first "securing and safety" operations that proved fundamental for the removal of the first causes of degradation due to the damage suffered in the collapse of buildings.

According to the already tested model in Sassuolo, Emilia Romagna region, the Opificio delle Pietre Dure- OPD in Florence and the *Istituto Centrale per il Restauro* -ICR, centres of excellence for restoration of the Ministry of Culture and high-level training of future restorers, created actual labs inside the security depots for the first conservation and restoration interventions, allowing at the same time to proceed to further assessments, in collaboration with the

Archaeology, Fine Arts and Landscape Responsible bodies-ABAP, of all the cultural heritage assets collected in order to plan the subsequent phases of intervention according to a scale of “urgency”.



*The Laboratory for “safeguard measures” of the Palazzo Ducale of Sassuolo © OPD of Florence*

The urgent demand of such “emergency” depots/restoration centres is under the responsibility of the Minister of Culture who, in the framework of the specific programme named “Recovery Art”, has allocated National Recovery and Resilience funds for their creation in strategic locations throughout the country.

It was therefore deemed appropriate and necessary on the part of the Directorate-General for Cultural Heritage Security, according to the art. 17 of the Presidency of the Council of Ministers Decree n. 169 of 2019, to “*ensure the conception, planning, coordination, implementation and monitoring of all initiatives concerning the prevention of risks and the security of cultural heritage and the coordination of interventions following national and international emergencies, also in cooperation with the other competent administrations. The Directorate General also ensures the smooth running and central coordination of the management of emergency operational interventions to secure the mobile and immovable cultural heritage, recovery actions and reconstruction in the areas affected by disasters[...]*” the elaboration of “*Guidelines for the identification, adaptation, design and setting up of depots for the temporary storage of movable cultural assets including annexed restoration laboratories*” (issued with Directorate Decree of 8.03.2022) which takes into consideration all technical aspects for the preparation of Security Depots to be set up in all regions, also on the basis of specific reports of state-owned properties that could be repurposed to become places for the collection of movable assets with the provision also of restoration laboratories.

To this end, with a decree dated 29.04.2021, the Cultural Heritage Security Directorate had set up a Technical Group, formed by experts with direct experience in the field, due to the work carried out in the various emergencies occurred in the territories. It is a technical document in which high quality knowledge and good practices are concentrated, that has been refined over time by those on the “front line” who faced emergencies starting from as far back as the 1966 Florence flood, a stepping-stone for this activity, from which the restoration activity conducted by the OPD originated.

The ratio behind the Guidelines is to design a depot “model” that becomes not only a place for collecting works rescued from the rubble of collapsed or flooded buildings, but also a site for conservation, restoration, cataloguing and research of the stored assets, and above all a place where restorers can be trained to deal with the different types of damage affecting the assets, and the “securing” operations that are so important for the preparation of subsequent interventions. In the Guidelines, all aspects for the set-up of suitable deposits are analysed, such as: choosing a suitable location, in compliance with its structural requirements with particular attention to anti-seismic measures, including the engineering plan aspects to be designed (anti-intrusion and fire prevention systems, room air-conditioning systems), and building/setting up plan for the depot and the laboratory for “securing operations” and restoration work.

From a regulatory point of view, the current Guidelines originate from the Directive for the “*Procedures for the management of activities to secure and safeguard cultural heritage in the event of emergencies resulting from natural disasters*” of December 2013 and in the one of April 2015, which is still the basis of all legislation on the subject, but, as already pointed out, the Guidelines analyse in further detail, all issues related to proper cataloguing of the assets, with the use of the templates attached to the Directive for the recording of all the data relating to retrievals, and conservation forms that were used for the first time in Sassuolo, and formulated by the OPD in agreement with ICR, in which the safety operations carried out are recorded and the level of urgency of the subsequent restoration work is assessed according to scientific criteria.

The possibility of entering this data in the *Carta del Rischio* (in English Risk Map) system, from July 2020 managed by the Heritage Security Department, allows to implement information on the movable assets contained within the buildings already georeferenced in the system. It is from this set of data that the damage caused by each calamitous event can be accurately quantified. It will, in fact, be possible to list the assets recovered and those lost, and thus to proceed with the planning of any subsequent conservation and restoration work, also on the basis of a budget forecast.

The strategic importance of the depot is then confirmed, when all the various phases related to the protection of assets can be carried out, in continuity with the ordinary action of the Responsible bodies or Superintendencies. Dealing with all aspects of management, *the Guidelines* also address the agreements established between the Superintendencies and the dioceses for the long-term temporary storage of assets that are mainly ecclesiastical property.



The case of the Santo Chiodo depot (photo below), established by Umbria in 2008 in the industrial area of Spoleto, which has become the “pilot” depot for the planning of those envisaged in the National Recovery and Resilience Plan, serves to prove how already during the emergency phase agreements on the territory reveal to be fundamental: the depot, in 2016, in the aftermath of the tremors of 26 and 30 October, the Regional Crisis Coordination Unit-UCCR of Umbria benefited from the special agreement in place for the sheltering of artworks and the implementation of all interventions, which later, at the end of the emergency phase, was handed over by the UCCR to the ABAP Superintendency of Umbria. Increasingly, in this coordinated framework of activities, the importance of security depots as workplaces at various levels emerges, as these places are not only specialised “clinics” for the care of cultural heritage, as some have defined them, but also research and training centres.



*Santo Chiodo depot, external view (Spoleto, Italy) © ABAP Superintendency of Umbria*

A further aspect taken into consideration by the Guidelines is that of the use and valorisation of the stored assets, based on the awareness that the time the assets remain in storage may extend beyond all forecasts as the reconstruction period of the buildings could be protracted, as every phase of post-seismic reconstruction is proving to take longer than the expected period, often with overlaps between one phase and another as in L'Aquila.

Therefore thinking about the design of the new depots as sites that can also be converted into exhibition spaces is fundamental and has already become a requirement for the depots envisaged in the Recovery Art, both with funds managed by the MiC (depots created by the reutilisation/recovery of the former nuclear power plants of Borgo Marengo and Garigliano, depot to be built in the state-owned complex of the former Camerino barracks, to be built in the Cerimant barracks in Rome, depot to be built in the Fortress of Palmanova) and funds managed with the supplementary funds drawn from Italy's recovery and resilience plan-PNRR assigned to the Office of the Extraordinary Commissioner for the reconstruction of the 2016 earthquake crater areas. This involves four projects: the extension of the Santo Chiodo security depot in

Spoletto (PG) and the conversion of the former Slaughterhouse in Spoleto (PG) into a multipurpose security depot for the construction of restoration laboratories and exhibition areas, the conversion of the former Bishop's Seminary in Rieti into a multipurpose security depot and the construction of a new security depot in an industrial building on the outskirts of the city, a part of the depot planned with the conversion of the former barracks in Camerino, the conversion of the former slaughterhouse in L'Aquila into a multipurpose security depot. In the case of the refuncting of the former Army barracks in Camerino, the project drawn up by the Italian State Property Agency in cooperation with the Office of the Extraordinary Commissioner and the Directorate General for Cultural Heritage Security, envisaged not only shelter and restoration laboratories, but also exhibition areas where temporary exhibitions of the recovered assets could be organised. All the depot projects have taken into account the Guidelines and have been verified for the adoption of the standards provided therein by the Directorate General for Cultural Heritage Security and the Office of the Special Superintendent for the 2016 earthquake of the MiC.



## MINISTRY OF CULTURE

### DIRECTORATE GENERAL FOR THE SAFETY OF CULTURAL HERITAGE

#### EVENT: EARTHQUAKE OF 24 AUGUST 2016 AND SUBSEQUENT AFTERSHOCKS - SUMMARY OF ACTIVITIES' DATA

	IMMOVABLE ASSETS		MOVABLE ASSETS				DEPOTS RECOVERED MOBILE ASSETS	RUBBLE				
	DAMAGED BUILDINGS (Churches, Buildings, Artworks)	BUILDINGS WITH SECURING OPERATIONS IN PLACE AND PLANNED (by MiC, LOCAL BODIES, DIOCESE)	RECOVERED ASSETS (DAMAGED AND NOT DAMAGED)	BUILDINGS WITH SECURING OPERATIONS IN PROGRESS, IN PLACE, AND PLANNED (by MiC, diocese, local bodies)	ASSETS SUBJECT TO RESTORATION IN PROGRESS OR PLANNED (by MiC and Diocese)	TOTAL N. DEPOTS	N. of BUILDINGS WITH REMOVAL OF RUBBLE IN PROGRESS DUE TO POSSIBLE PRESENCE OF CH ASSETS					
<b>UMBRIA</b>	716	238	13749	1148	66							
<b>MARCHE</b>	2928	1312	13247	718	97	1798	14	627	4361	2	1756	3
<b>LAZIO</b>	659	147	3280	16	16		9	26	3	1		
<b>ABRUZZI</b>	806	163	428				8	30	255	1		
<b>TOTAL DATA</b>	5109	1860	30704	1882	163	1814	31	657	4387	10	2011	5

Overview of the security depots used by the MiC in the last post-earthquake emergency 2016 and the assets stored

# RESPONSE

## The Safeguarding Action Plan for Cathedrals

*Author: Dominique JAGER, Prevention and safety advisor for cultural heritage, Delegation for Inspection, Research and Innovation Safety, Security and Audit Mission, Directorate General of Cultural Heritage and Architecture, Ministry of Culture – France*

Implemented by the French Ministry of Culture in 2020 and following the Notre-Dame cathedral fire, this action plan's main objective is to improve the level of security and safety of the 89 cathedrals, basilicas and churches belonging to the State. It lists precisely the actions to be implemented, divided into eight specific fields of action. It includes the reinforced monitoring of each building and the progress made in terms of security and safety, while taking into account technological advances, at a time when malicious fire-raising acts are increasing.

It is currently being revised to further increase its readability and to integrate the main lessons identified by all the actors and the inputs emerging from the regular audit missions carried out in the field.

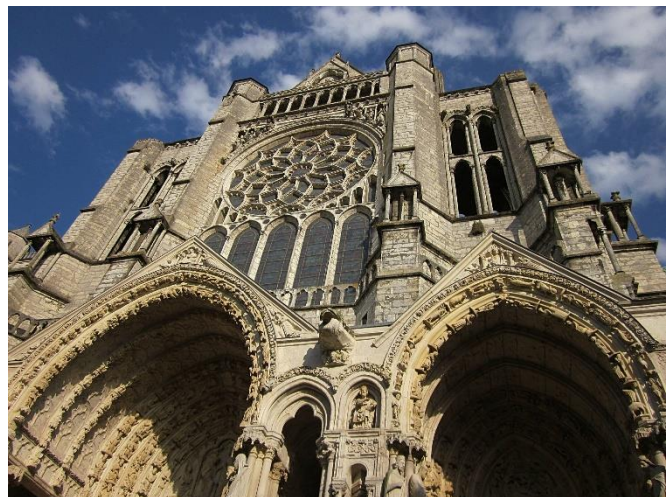
### **1. An objective of permanent improvement of the level of security and safety of these buildings**

This action plan is above all intended to be pragmatic, by proposing a series of very concrete measures, which will eventually form part of a genuine multi-year master plan drawn up for each cathedral, going far beyond the simple regulatory requirements for personal safety, by listing the actions to be implemented to protect cultural heritage.

It is also a matter of constantly developing relations between all the players involved in the safety and security of each building and, in particular, the links with the territorial safety commissions, responsible for verifying compliance with the regulations applicable to the premises and buildings with open access to the public (ERP), but also with the operational forecasting services of the Fire and Rescue Services (SIS), in order to prepare and facilitate emergency service activities in the event of a disaster.

The safeguard plan for cultural assets, which is the result of a specific assessment of each building, is the very example of this interdepartmental work. It is supervised by the cathedral's curator, in close liaison with the emergency services.

The main lessons learned from the periodic visits to the cathedrals carried out by the two security prevention advisors for the heritage of the Missa (Mission de la sécurité, la sûreté et de l'audit) relate to human surveillance, since it is so difficult to enforce this rule



*Facade of the Chartres Cathedral. Source Pixabay*

during public opening hours. And at night time, the operation of automatic fire detection equipment (AFD), by transfer to a remote surveillance company, raises some doubts and reveals a few shortcomings.

The increasing use of new technologies (use of thermal and visual cameras, automatic CO2 extinguishing devices for electrical cabinets or spraying water mist in the attics) is added to the large-scale deployment of automatic fire detection in cathedrals and allows real progress to be made in reducing the vulnerabilities encountered. However, it can in no way be exempted from the support provided by human activities and planning strategies, essential components of the security and safety of these religious buildings.

## **2. A systemic approach to identifying the measures to be implemented**

As soon as it was launched in April 2020, the "security/safety" action plan for cathedrals listed some fifty actions concerning the three areas of human, technical and organisational aspects. To make them easier to understand, they were divided into eight areas, with the specific aim of:

Limiting the risks of outbreaks: This involves regular checks of the electrical installations and bringing them up to standard, removing any reservations, using equipment and installations correctly and excluding the use of multiple plugs, removing obsolete installations, keeping extra vigilant during periods of work with hot spots, enforcing the ban on fireworks let off from cathedrals and, in the case of fireworks in the vicinity, ensuring that no incandescent debris falls on the building, installing a lightning conductor and lightning rod.

Reducing the risks of a fire developing and spreading: it is imperative to eliminate all unauthorised storage of combustible materials, to clean the attic regularly (construction residues, dust, bird droppings), to identify precisely the areas suitable for storage activities and to designate these premises as special risk premises with adequate fire resistance provisions. Automatic fire detection should be installed in high-risk premises with a high heritage value (attics, sacristies, belfries, treasures, organs), combined with organisational measures to be activated at any time and within a reasonable timeframe if the detection is triggered. For particularly sensitive buildings, an automatic fire extinguisher may be installed. The overlapping of attics is to be favoured when possible.

Facilitating the action of the fire brigade: periodic drills/exercises involving the emergency rescue services, particularly on the upper levels of the building: the installation of dry columns must be assessed in order to facilitate their intervention. The fire brigade will be able to use the "Listed Establishment" plan of reference to facilitate their intervention. In order to reach the attic, it is also necessary to have at least two safe stairways. A passage to allow the emergency services to access all the premises must be ensured.

Maintaining privileged relations with the emergency services: it is important to identify the fire service contacts in the prevention, forecasting and operations departments. Relations with the emergency services go beyond just the State-owned cathedrals and cover all cultural heritage premises and buildings open to the public, listed by the Ministry of Culture.

Supervising the operating conditions of the various activities (religious and cultural): for each cathedral, an architect of the "*Bâtiments de France*" is designated, by order of the regional prefect, as the curator, exclusively in charge of ensuring safety. When the cathedral is open to the public, a representative of the operator or the person responsible for the building must be present. A set of operating regulations for cultural events (concerts, visits, etc.) must be drawn

up and validated by the safety commission; it details the different configurations of events and the measures to be implemented in terms of security and safety.

Reducing the consequences of a disaster: this mainly involves drawing up the safeguarding plan for the cathedral's cultural assets, prioritising the works and/or premises for evacuation or protection operations in the event of a disaster. This document must be operational and validated by an exercise carried out with the emergency services. It must be regularly updated and available to the fire brigade in the event of a disaster.

Reinforcing the training of those involved in fire safety: it is important to ensure that those responsible for fire safety (clergy, management of visiting groups) are regularly trained in what to do in the event of a disaster and that this training is recorded. The training of those involved (initial, in-service, when taking up their posts) must be reinforced, as well as decentralized and ensured at a local level by providing training in the regions, on specific themes, in the presence of all the different actors involved (architects of the "*Bâtiments de France*", curators of historic monuments, heritage engineers, etc.).

Implementing management tools and organisational measures: regular updating of the cathedrals' monitoring charts, prioritisation of actions to be carried out (in liaison with the regional cultural affairs directorates), updating of the Ministry of Culture's security/safety intranet site.



*Notre-Dame Cathedral. Source Pixabay*

As mentioned above, this plan is currently being revised and some additional items will be added to the existing 47. They take into account the latest lessons learned from feedback (exercises and fires) but also from audits carried out in the field. They concern, to mention only the main ones, the implementation of a project management assistance for each cathedral, the use of thermal and visual cameras to support automatic fire detection, the periodic verification of lighting installations belonging to the municipalities, the

drafting of a master plan for improving the level of safety and security, the emphasis to be placed on the removal of doubt in the event of a fire alarm being triggered, which must be operational and rapid.

The thirteen annexes of the action plan each highlight a key point concerning safety, such as the technical safety installations required for this type of establishment open to the public<sup>7</sup>, the importance of drawing up operating specifications, the plan for safeguarding cultural property, preventive measures in the event of work involving hot spots, and the key organisation chart, to mention only the main ones.

### **3. Reinforced monitoring of the buildings and progress made**

Monitoring of the consideration and implementation of the items listed in the "security/safety" action plan for cathedrals is carried out at three levels: that of the building (by the architect of the "*Bâtiments de France*", curator of the cathedral and sole security officer), that of the region

<sup>7</sup> Audible alarm, security lightning, fire extinguishers appropriate to the risks...

(the regional curator of historical monuments of the Regional Directorate of Cultural Affairs-DRAC) and finally that of the Ministry (by the security prevention advisors for the heritage, for all the State-owned cathedrals).

A monitoring chart containing the most relevant information concerning fire safety is also produced for each cathedral and updated periodically. This information allows the following categorisation<sup>8</sup> of the buildings:

(As a reminder: some cathedrals are still rated at "insufficient level". These are buildings for which the safety commissions have issued a poor performance rating on operation and which therefore present risks for the safety of people but also for the protection of cultural heritage).

Cathedrals classified at the "regulatory threshold" level: this is the minimum safety level below which it is not acceptable for any building to be. Priority is given to the safety of people.

Cathedrals classified at the reference level: the safety of people is reinforced, the intervention of emergency services is facilitated and the preservation of property is taken into account with additional protective measures (isolation of premises at risk, installation of dry columns, automatic fire detection).

Cathedrals classified at the high level: for these buildings, the preservation of assets is stressed even further, because of the wide range and consistency of the protection measures implemented (compartmentalization of the attics, early detection of a fire outbreak associated with an operational removal of doubt, presence of a schedule of utilization conditions, finalized plan for the safeguard of cultural heritage assets and implementation of an Exercise with the fire brigade, ...)

Within the framework of the implementation of the action plan, the effort is, of course, currently focused on the rare cathedrals presenting an insufficient level of security but, above all, on the majority of the cathedrals, which are classified at the regulatory threshold level, in order to allow them to progressively reach the reference level followed by the high level. The use of this categorisation also allows the prioritisation of audit missions in the field, as well as the identification of safety issues to be developed as a priority in the framework of the periodic 'information days' carried out for the benefit of the DRAC by the Ministry's two fire safety prevention advisors.

In conclusion, the security/safety action plan for cathedrals, while affirming the will of the Ministry to improve the level of security and safety of these buildings and to accompany all the actors in this process, constitutes a real detailed and structured "toolbox" of actions to be carried out to improve the level of security and safety of these buildings. These actions must however be prioritised and adapted to each establishment.

As this project is subject to ongoing monitoring, the need for all those involved in the security and safety of cathedrals to work together is clear, particularly including the emergency services.

---

<sup>8</sup> Appendix 2 of the action plan lists the criteria used for this classification of cathedrals (regulatory threshold, reference level and high level).

# RECOVERY

## Project for the conservation and relocation of the Tomb Zeynel Bey in Hasankeyf

*Authors: Ph.D. Serap SEVGİ (MSc. Architect), Ministry of Culture and Tourism General Directorate of Cultural Assets and Museums, Director of Antalya Survey and Monuments Murat ÇETİN (Civil Engineer), Ministry of Culture and Tourism, General Directorate of Cultural Assets and Museums*

The public investments that are realized to meet the necessities of modern society affect the conservation of the diverse and multi-layered cultural heritage sites adversely. The public investment programs such as dams, hydroelectric power plants, highways, and pipelines which are an issue of crucial national interest play an important role in the development of the region; however, they also carry the responsibility of protecting and preserving the cultural heritage of the region for the next generations.

The studies on improving the soil and water resources of Tigris were launched by The General Directorate of State Hydraulic Works (DSI) in 1954. Having started in 2006, the dam construction was completed. Hasankeyf was the focus of this project since it is a 1st and 2nd-degree archaeological site, and the monuments and its ruins were going to be affected by the dam.

Hasankeyf has been an important settlement for ages. It has a cultural continuity and diversity dating back to antiquity. Hasankeyf is a site in which the cultures of Central Asia, Caucasus, Persia, Mesopotamia, and Indo-Europeans meet. Therefore, it is one of the starting points of origin modern Anatolia. It is easy to follow the significant archaeological and cultural traces of Assyrian, Roman, Byzantine, Artuqid, Ayyubids, and Ottoman civilizations in Hasankeyf.

The areas of settlement on both banks along the Tigris River in Hasankeyf are named to be Lower City, Citadel, and Upper City. The focal point of the project is the tomb Zeynel Bey due to the fact that the cultural assets within the Lower City in Hasankeyf are to be adversely affected by the introduction of Ilisu Dam and Hydro Electrical Plant while the tomb Zeynel Bey has always been considered to be the symbol of the project by its architectural and artistic features as well as its uniqueness.

The Social Complex of Zeynel Bey is composed of 2 Artuqid and 1 Ottoman madrasa, 1 zawiya, 1 tomb, 1 Inn, and 1 bath constructed during different periods. The Tomb Zeynel Bey is dedicated to Zeynel Bey, the son of Aq Qoyunlu ruler Uzun Hassan who fell martyr during the Battle of Otlukbeli (1473).

The tomb is under the influence of the traditions in Azerbaijan and Turkistan. It is the only example of the classical style depicting the glazed tile and gypsum embroideries within the interior space of the tomb and the glazed and nonglazed bricks on the exterior surfaces of the tomb representing the architectural elements of the tomb, taking its roots from Azerbaijan to Central Asia starting from the 14th century.

The relocation of the tomb from its original location to the new location where it is to be restored has been planned by the national legislation, the international conventions and the resolutions concerned.

Referring to Article 7 of the Venice Charter, “The moving of all or part of a monument cannot be allowed except where the safeguarding of that monument demands it or where it is justified by the national or international interest of paramount importance”. According to Burra Charter, the design of the location where the structure is to be relocated is of particular importance in case such relocation is necessary in view of its conservation. That is to say that the location to be relocated should be designed in a manner to allow the reflection of its grandness, authenticity, and all other aspects after the completion of the relocation process. According to the Convention for the Conservation of the Traditional Architectural Heritage, the structures should be relocated without any damage to the item to be relocated in one piece as the case may be. According to the Law of Conservation of the Cultural and Natural Assets numbered 2863, it is deemed to be a must to relocate the structure, such works should be executed under the surveillance of the Ministry of Culture and Tourism (MoCT) in line with the resolution/s of the relevant regional board of conservation.

In this context, the holistic relocation scheme which requires advanced technology has been preferred due to the concerns for the authenticity of the structure.

The Hasankeyf Archaeopark in the vicinity of the new settlement area where the structure is to be relocated has been planned as the analogy of the original city observing the relationship between the ruins around the structure and the existing pattern with emphasis on the architectural features to allow cultural persistence and permanency of urban memory

In this context, projects have been developed to relocate the tomb of Zeynel Bey in a holistic approach and conservation at the location where it is to be relocated.

The projects have been ratified after the resolution of the Regional Conservation Board in Diyarbakir in line with the remarks made by the Scientific Commission established by MoCT with the attendance of the academics all of whom are specialized in their relevant fields.

The supervisory services of the project awarded by the DSI in the year of 2015 were carried out by the specialists of MoCT, The General Directorate of Cultural Assets and Museums (KVMGM) with due diligence jointly with the specialists of DSI. The works were executed by the highly specialized company of ER-BU İNŞAAT while the projects were developed by the company a project. Jacking and degradation works were executed by BRESSER and relocation works by CABA.

The stages of the transportation work are as follows:

- The construction of a 30 cm elevating base around the tomb,



- The construction of 28 elevating and transporting beams at the lower parts of the walls,
- The production of 90 cm of elevating and transporting plate onto which post-tensioning was applied,
- The installation of 44 hydraulic jacks with 50 tones capacity to lift and replace the Structure,
- Cutting the disassembling part of the tomb from the inner side to have a decent edge,
- Taking the tomb off the ground and placing it on the Self-Propelled Modular Transporter - SPMT
- Reaching the new location, placing it, and montage Works
- Separating the temporary structural elements used in relocation

The lifting arms were not taken out from the inner part of the wall but they were left in the wall to prevent these lifting arms from drilling inside the walls of the tomb, and damaging the ornaments inside the tomb. The elevating parts moving under the walls of the tomb amounted to 28 units with a size equal to half of the H beam with 50cm of diameter and 2.20 cm of length since the ratio of the surface areas, on which these elevating parts impact over the total area should be small. The consoles cover approximately half of the base area of the structure.

The holes for the consoles were drilled in different orders to prevent any possible crush, fractions, or overturns arising from the imbalance on the remaining parts which might cause two times more pressure. The gap between the H steel beam and the wall was filled with the expanding mortar and fast endurance-gaining mortar. New holes were drilled only when the filled holes started to gain endurance.

To lift and transport the tomb, the transport platform with 90 cm of thickness was integrated into the transport system of the structure with the help of the H steel profiles which were placed into the holes drilled into the structure. Also, the elevating platform is reinforced with post-tensions.



*Last preparations before taking over SPMT @AFN*

The platform elevating base and transport platform were easily separated at the cutting line in which the structure was disassembled from the ground by placing a 10-cm mortar-free layer between these two platforms.

During the elevating operations which include forming a rigid plate on the base of the tomb and lifting the tomb and placing it on the SMPT thanks to this plate, a reinforced cement plate was constructed to keep the vertical accelerations low (limited to 0,01 g), to avoid any vibrations and quakes, as well as any elevation and endurance difference on the crypt ground in the inner space since the tomb would be lifted from its location for SPMT to go under the tomb to prevent the tomb from leaning. Similarly, another reinforced cement plate was temporarily installed on the new base and the inner part of the area on which the building would be placed for SPMT to act in a proper and controlled way.

The weight of the tomb was calculated to be around 800-900 tons. However, to stay on the safe side, the tomb's weight was calculated as 1100 tons, a concern related to the uneven stress distribution of the transport console which actually normally increases. Therefore, the outer side of the wall was surrounded by a steel belt. During the lifting and transport, the rubble wall was temporarily supported from the inside as an additional security precaution. After the lifting operations for the lowering down of the tomb 44 jacks were installed.

The SPMT operations included flattening the surface to facilitate access and exiting the tomb site in order to avoid differences in height and stability on the ground, the inside filling was compressed with plenty of mixed materials and reinforced concrete forming a platform area.

Similarly, the same process has followed the interior of the new foundation. When the tomb was separated from the ground, the cutting process was realized by using a circular saw to ensure a flat surface to avoid elevation differences between the lifted parts.

8 seismic isolators of friction pendulum type with 80 cm of diameter were installed on the structure (Er-Bu (e), 2016). Four jacking points for each isolator were designed on the lower and upper beams, on both sides of the seismic isolator, as well as on the inner and outer parts of the beams to lift the tomb a few centimetres in case the seismic isolators would need to be replaced with new ones or with other devices using a different technology.

A seismic isolation and supporting base ring beam over it were built after the structure was lifted via the hydraulic system and SPMT left the area since a rigid platform on the top and base is required by the seismic insulation system used in the replacement of the tomb and the construction of such a platform would block the movements of SPMT. A 40 cm free space around the structure was added to the design of the base so that the vibration area of the isolators would be empty. Moreover, an additional floor was added under the crypt level to carry out maintenance works. The base was insulated against water to maintain the isolators dry and to prevent the water and humidity to pose a risk to the original structure after the integration of the original structure and the concrete base. The juncture detail of the new concrete base and the original structure was arranged with the application not only of cement with a low salt ratio and separator layer and also an insulator on the juncture surfaces.

The road constructed for the transportation process has been designed taking into consideration the weight, geometric characteristics of the mausoleum and the transportation system and the technical capabilities of SPMT to be used.

A transport route having a maximum %4 inclination, 1.935 meters of length, and 15 meters of width was constructed for the transport operation. 182.000 m<sup>3</sup> filling was used and 25.786 m<sup>3</sup> was excavated during the works of this transport route. 2 concrete platforms were constructed at the beginning and end of the transport route. 3 vents were constructed at the waterway passages.

The steel tension rods on the dome of the tomb were observed to fade before the transport. Therefore, using the current load cells and data gathering systems, 10 kN was given to each tension rod. Any force changes and fraction movements on the tension rods were observed up until the transport day and this observation continued during the transport.

Some structural damages (fraction, swelling, loss of the cutting line, etc.) on the bricks and mortars of the outer dome were observed after the restoration in 2010. As a result of the evaluations, any interventions were deemed necessary before the transport since the implementations with mortar require a long time to gain their endurance and become stabilized; hence, these applications were liable to cause trouble rather than provide any benefits.

The tomb was transported to its new location (1985m, 2 km.) via SPMT passing under the tomb and taking the load of the structure off when it was lifted 1.44 cm with the help of the 44 pieces of hydraulic jacks with 50 tons capacity. During the lifting, the low acceleration, did not cause any vibrations and quakes, avoiding any damage to the tomb. Also, the hydraulic jacks were connected to the pump to form 3 groups. In case of an unbalanced flexing to one side, the hydraulic pumps on the tilted side could operate further to compensate allowing the plane to remain parallel to the ground.



*Last preparations before taking over SPMT ©AFN*

Each SPMT platform has 12 axes and 4 order are connected to each other and formed to form a 48 axes a relocation group. The transport process started at 7:45 am on May 12, 2017, and the tomb was delivered to its new location.

During the transport, SPMT moved towards the ground whose base was constructed in a proper way. The hydraulic jacks were attached to the loading points organized on the base after passing through the holes on the rigid base platform and the gaps between SPMT vehicles. These jacks enabled the tomb to be lifted over SPMT and the tomb was placed on the ground via the jacks after SPMT left the area. The operations applied during the lifting process of the tomb were followed in reverse order during the installation process.

The removal of the transport platform used in the transport of the tomb (a reinforced concrete plate with 90 cm of width made of C40 concrete) and the removal of 28 HEB360 beams installed on the tomb from the surface of the main wall was realized by using 15-cm drilling cores. Approximately 1-105 cm of HEB beams had already been integrated into the structure.

To prevent the collapse of the dome, a tensioning system running through the dome was installed instead of the circumferential tensioners. The tensioning system was applied on the inside, but the outer tensioning remained in place to keep on the safe side.

A burial area was built for the gallery located under the level of the crypt due to the gallery space required for the maintenance of the seismic isolators. Moreover, a stone coffin was designed for the level of the crypt. Since the tomb's floor covering with the drop dome were severely damaged, a viewing terrace was built with a steel- covering.

The marks on the structures were primarily assessed through the source reliability in the restitution studies. The additions implemented on the social complex over the years, the altered architectural components, the filled gaps, the vanished architectural components, and the fillings around the structure were investigated for these studies. Since there are no marks on the structure related to the top covers and endings and there is no adequate data to make a comparison between the structures of the other social complexes built during the same period, a restitution study related to the Ottoman period was attempted; however, the preservation of the structure as it stands today was approved due to the lack of source reliability.

Having a delicate cylindrical structure with two domes as well as 550 years of history, Zeynel Bey Tomb built with composite material is the first monument to be transported as a whole to 2km far away and 65m up in Turkey. Moreover, this transport operation is a crucial work in the literature concerning the quality and the size of the transported monument. The transport operations were completed on May 12, 2015, and its installation was successfully completed on May 15, 2015. The project will reach its main goal after the completion of the transportation of all immovable cultural heritages within the scope of the Project to the Archaeopark Area, as well as the conservation of these heritages.

[This is a shortened version of the study, below is the link to the full article.](#)

## Including cultural heritage protection among the immediate needs in case of emergency: the role of the Union Civil Protection Mechanism

*Authors: Giovanni De Siervo, Disaster Risk Management expert, Italian Civil Protection Department and Tiziana Vicario, PROCULTHER-NET Project Manager, Fondazione Hallgarten-Franchetti Centro Studi Villa Montesca*

In the event of disasters and emergencies, the protection of cultural heritage is often regarded as an afterthought compared to more pressing needs such as safeguarding human life and health. This, of course, is understandable and perhaps inevitable. However, over the years there is a growing awareness of the ever-increasing importance of also including among the primary needs of populations: their roots, forms of aggregation, cultural sites and monuments, all those elements that characterise any community's sense of belonging, that is, their identity. Their cultural heritage.



*EUCP Team experts during the damages assessment on the Parish of the Asunción following the earthquakes of September 2017 © Miquel San Nicolás*

First responders and ministries of culture avail themselves of different methodologies, languages and operational timeframes. Although they often work together and in close proximity, they do not always interact or understand each other, and this affects their coordination and operational capacity during response operations. Starting from this premise, some countries that have already developed good practices and positive experiences in this field at national level have launched a common path to find a new way of working.

The frame of reference for this relatively recent work field is the Union Civil Protection Mechanism (UCPM). This collaboration framework established in 2001 has now become a network composed of the civil protection national authorities of the 27 Member States of the European Union and 8 other Participating States (Albania, Bosnia and Herzegovina, Iceland, Montenegro, North Macedonia, Norway, Serbia and Turkey).<sup>9</sup> The purpose of this Mechanism is to facilitate cooperation among the different countries in the various phases of the Disaster Risk Management cycle, from prevention to preparedness, from response to recovery. This cooperation framework, that has lasted more than 20 years, has allowed over the years to share a common language, to define common procedures and modes of intervention and, in particular, to build confidence in the competencies of other countries or sectors.

<sup>9</sup> Decision No 1313/2013/EU of the European Parliament and of the Council of 17 December 2013 on a Union Civil Protection Mechanism and following modifications. For more details see: [https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/eu-civil-protection-mechanism\\_en#facts--figures](https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/eu-civil-protection-mechanism_en#facts--figures)

The UCPM has been and continues to be a great political and operational journey that has shown how collaboration between countries in sectors such as civil protection represents a virtuous example of what the European Union could be.

The path of the UCPM has been a steady one, starting from traditional civil protection competences such as search and rescue or forest fire fighting leading to the definition of a common language that is now shared by all 35 Participating States. Using good practices and available international classification systems, shared reference standards to which everyone can refer have been pragmatically defined; and a common training path has been codified that allows professionals from different backgrounds and origins to understand each other and share a vision and operational methods.

There is no common definition of civil protection at international level; each country defines it according to its own risk profile, administrative culture and organisation. Nevertheless, it is possible to find a common thread joining modern risks and disaster management systems. Competence remains with the Member States, so much so that the Treaty on the Functioning of the EU now expressly states that harmonisation is excluded.<sup>10</sup> However, the approach of disaster management is very pragmatic and goal oriented beyond institutional mandates and codified competences. This is why in many areas talking about emergencies and disasters can overcome differences and viewpoints normally considered irreconcilable.

Over the years, UCPM has successfully developed, starting from the typical civil protection areas and slowly expanding to wider and neighbouring areas, constantly striving to incorporate the best practices and sharing of know-how among all Participating States.

Today, there are 17 types of modules<sup>11</sup>, a structured training programme, a European Civil Protection pool of resources, the rescEU reserve created in December 2018, and the Emergency Response Coordination Centre (ERCC). There is a system that facilitates the intervention of teams from all 35 Participating States in a coordinated manner under the European flag with the coordination support of the European Commission.

As is often the case in Disaster Risk Management, the most substantial changes have occurred following major emergencies that have revealed gaps or opportunities for improvement in the response phase. The strengthening of the European system has gone hand in hand with the occurrence of major crises testing more countries at a time. Thus, there have been major

---

<sup>10</sup> For more details see Title XXIII, art. 196, paragraph 2 of the Consolidated version of the Treaty on the functioning of the European Union, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12012E%2FTXT>, stating that “*The European Parliament and the Council, acting in accordance with the ordinary legislative procedure shall establish the measures necessary to help achieve the objectives referred to in paragraph 1, excluding any harmonisation of the laws and regulations of the Member States.*”

<sup>11</sup> Decision No 1313/2013/EU, Art. 4, 6. “*module’ means a self-sufficient and autonomous predefined task- and needs-driven arrangement of Member States’ capabilities or a mobile operational team of the Member States, representing a combination of human and material means that can be described in terms of its capacity for intervention or by the task(s) it is able to undertake*”. For more details see: Commission Implementing Decision 2014/762/EU or its subsequent amendment Commission Implementing Decision (EU) 2018/142 of 15 January 2018, which lay down rules for the implementation of Decision No 1313/2013/EU of the European Parliament and of the Council on a Union Civil Protection Mechanism.

upgrades of the system following major emergencies such as the recent forest fires and the Covid 19 crisis.

This system of cooperation in which the governments of the countries and the Commission join their efforts for the good of the population, as well as the different countries experts' great eagerness to work together by sharing their good practices and experiences, has allowed to achieve positive operational and political results. At the same time this Mechanism has become a reference at European level not only in the traditionally civil protection-related field but as a general emergency coordination tool on behalf of the EU (Member States and the Commission). In the case of Ukraine, for example, a single hub served to channel assistance from all the Member countries' ministries with the support of the Commission. Aid was, in fact, sent in the areas of civil protection, agriculture, health, energy and cultural heritage.<sup>12</sup>

Evidence of the Mechanism's success can be based on the increase in the budget available to the instrument, which has more than tripled in recent years, amounting to €1.263 billion for the current EU Multiannual Financial Framework (MFF) 2021-2027 to which additional €2.056 billion from the Next Generation EU allocation were added for the period 2020-2023.<sup>13</sup> Notwithstanding the fact that these figures need to be added to the value of the assistance offered by the UCPM Participating States; in the case of Ukraine €516 million must be added to €523 million for humanitarian aid programmes allocated by the Commission<sup>14</sup> to help civilians affected by the war.

Cultural heritage is one of the new frontiers of the UCPM, as also proven by the Ukraine case. The protection of the cultural heritage of countries and populations is now regarded as a civil protection priority and, as such, a system of procedures, guidelines and reference standards must be created, as was done in the past in areas such as Urban Search and Rescue (USAR) or Emergency Medical Team (EMT).

A series of projects<sup>15</sup> have laid the foundations for this to happen in an orderly and effective manner. By bringing together the good practices developed at national level by a number of countries that have been working on this issue for many years, a common language base and a pathway have been identified to be able to work together according to shared standards and methodologies.

The basic assumption is to encourage dialogue and collaboration between the civil protection and cultural heritage worlds, since only through a coordinated approach between these two core elements it will be possible to ensure its place in the list of activities among the foremost ones in response to emergencies.

---

<sup>12</sup> For more details see: <https://data.consilium.europa.eu/doc/document/ST-12398-2022-INIT/en/pdf>

<sup>13</sup> For more details see: [https://civil-protection-humanitarian-aid.ec.europa.eu/funding-evaluations/financing-civil-protection\\_en.Last access 17/01/2023](https://civil-protection-humanitarian-aid.ec.europa.eu/funding-evaluations/financing-civil-protection_en.Last%20access%2017/01/2023)

<sup>14</sup> For more details see: [https://civil-protection-humanitarian-aid.ec.europa.eu/where/europe/ukraine\\_en#facts--figures](https://civil-protection-humanitarian-aid.ec.europa.eu/where/europe/ukraine_en#facts--figures). Last access 17/01/2023

<sup>15</sup> In particular, the [PROMEDHE](#) (2016 - 2018) and the [PROCULTHER](#) projects (2019 - 2021), both co-funded by DG ECHO, have demonstrated the increasing need of encouraging cross-sectoral cooperation among disaster risk managers, cultural heritage actors and knowledge holders to increase the resilience of vulnerable cultural heritage.



Civil protection allows a timely arrival on the scene; it is a government-led system and therefore grants immediate access to the public administrations that manage emergencies, moreover this disaster management pragmatic approach aimed at solving problems as they arise, represents an added value for the technical competences of cultural heritage experts.

At the same time, the UCPM will offer a possibility to Member and Participating States to provide a coordinated and effective support to the affected country avoiding duplications and possible overlaps.

In parallel with the definition of a framework, it is also necessary to define a common standard intervention team dedicated to the cultural heritage protection, a module according to the civil protection language, and this should be finalised in the coming months by all UCPM Participating States. This definition contains the basic required qualifications to be part of the team so that all countries wishing to voluntarily apply are aware of such requirements. This path also offers great benefits at national level because it ensures that the operational methods of the various countries abide by internationally recognised high standards.

The UCPM offers much more than a framework for response operations, it currently covers the entire Disaster Risk Management cycle and since the 2019 revision of the UCPM legislation it has provided the legal basis for the establishment of the Union Civil Protection Knowledge Network. This new initiative aims at building up the EU's overall ability and capacity to deal with disasters through strengthening the efficiency and effectiveness of civil protection training and exercises, promoting innovation and dialogue, and enhancing cooperation in prevention, preparedness and response between Member States' national civil protection authorities and services.<sup>16</sup> In this framework the possibility to create a community specifically dedicated to Cultural heritage protection will be crucial not only to strengthen interoperability capacities within the Union Civil Protection Mechanism but will also offer a unique opportunity to share and capitalize on past experiences, best practices and lessons learnt for a stronger resilience of communities at risk of disaster.

This path is developing within the framework of an international trend that sees an increasing focus on the issue of cultural heritage protection in emergencies. Within the INSARAG<sup>17</sup> context a set of standards for search and rescue experts is currently being developed. At the same time, the G20 is now openly talking about the importance of *“recognising the need for strengthening and developing effective, sustainable, inclusive and coordinated management models and tools for protecting cultural heritage at risk, by linking short-term relief, maintenance and preventive conservation with longer-term measures and by combining the skills and competences of civil protection and cultural heritage actors, sustained by public awareness-raising initiatives”*<sup>18</sup>. The

---

<sup>16</sup> For more details see: Decision (EU) 2019/420 of the European Parliament and of the Council of 13 March 2019 amending Decision No 1313/2013/EU on a Union Civil Protection Mechanism available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019D0420>

<sup>17</sup> INTERNATIONAL SEARCH AND RESCUE ADVISORY GROUP (INSARAG). For more details see: <https://www.insarag.org/>

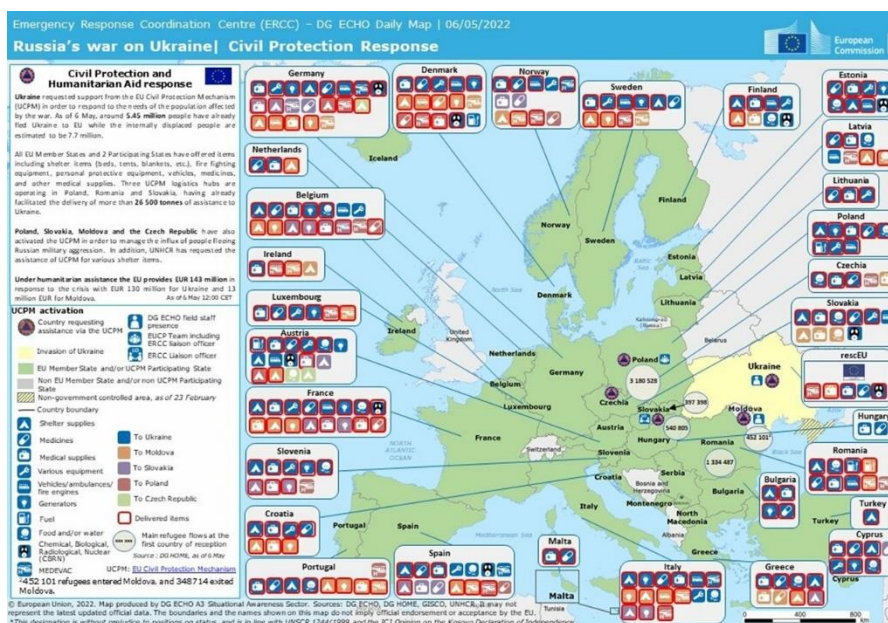
<sup>18</sup> For more details see: [https://media.beniculturali.it/mibac/files/boards/be78e33bc8ca0c99bff70aa174035096/PDF/DichiarazioneFinale\\_G20\\_ENG.pdf](https://media.beniculturali.it/mibac/files/boards/be78e33bc8ca0c99bff70aa174035096/PDF/DichiarazioneFinale_G20_ENG.pdf)

## Including cultural heritage protection among the immediate needs in case of emergency: the role of the Union Civil Protection Mechanism

Conference of the Ministers of Culture of the Euro-Mediterranean Region/EU-Southern Partnership, held in Naples on 16-17 June 2022 also recalled the importance of contributing “to fostering dialogue and cooperation between national and international actors to better protect and increase the security of cultural heritage in the face of crises and conflict and in the fight against illicit trafficking. This includes better exploiting the potential of EU invaluable instruments toward the protection of cultural heritage in emergencies and crises, including the European Civil Protection Mechanism, establishing tailored partnerships with Southern Neighborhood countries”.<sup>19</sup>

In this scenario, the UCPM was able to confirm its willingness to be primarily devoted to the protection of people against all kinds of natural and man-made risks by including, in accordance with its “General objective and subject matter”<sup>20</sup>, cultural heritage, by adapting its strategies to “Increasing the capacity to deploy teams of experts in the field of cultural heritage and civil protection” and “Increasing the profile of cultural heritage protection in disaster response operations”. In this sense, the contribution of PROCULTHER and PROCULTHER-NET is considered key to “further strengthen cultural heritage protection capacities of civil protection authorities in Europe by connecting civil protection and cultural heritage experts throughout Europe”.<sup>21</sup>

It is only the beginning of a virtuous path to ensure the protection of cultural heritage at risk and it seems every day more appropriate and urgent to gear our efforts toward the achievement of this objective.



ERCC - DG ECHO Daily Map 06/05/2022- Russia's War on Ukraine | Civil Protection Response © European Union, 2022

<sup>19</sup> For more details see:

[https://media.beniculturali.it/mibac/files/boards/be78e33bc8ca0c99bff70aa174035096/Card/medculture/PDF/Med Culture\\_FinalDeclaration\\_ENG1.pdf](https://media.beniculturali.it/mibac/files/boards/be78e33bc8ca0c99bff70aa174035096/Card/medculture/PDF/Med Culture_FinalDeclaration_ENG1.pdf)

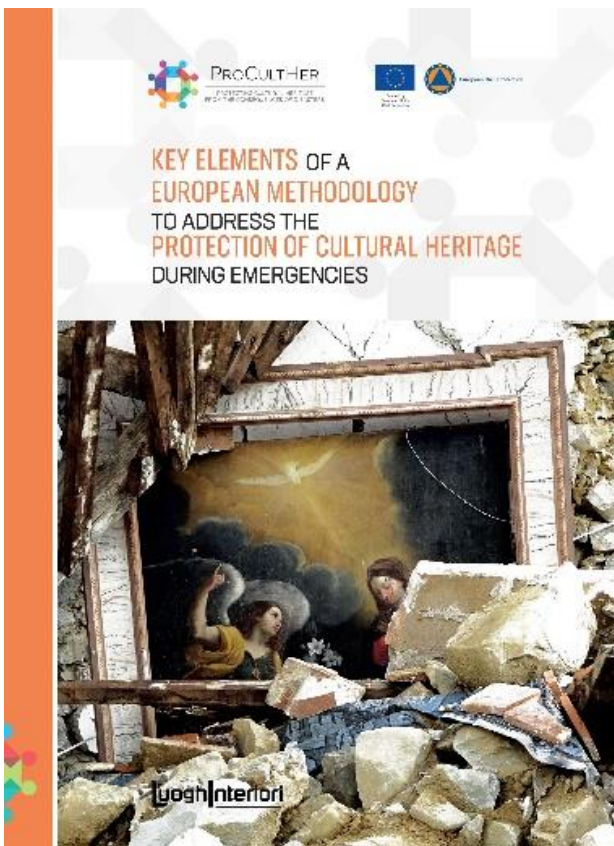
<sup>20</sup> For more details see: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013D1313&from=EN>

<sup>21</sup> For more details see: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0709&from=EN>

# FOCUS ON

## Towards the development of European capacities for the protection of cultural heritage at risk: the “Key Elements of a European Methodology to Address the Protection of Cultural Heritage during Emergencies”

*Authors: Veronica Piacentini, Architect, Italian Civil Protection Department and Tiziana Vicario, PROCULTHER-NET Project Manager, Fondazione Hallgarten-Franchetti Centro Studi Villa Montesca*



*Cover of the “Methodology” @ PROCULTHER*

In recent years, a variety of actors, national and international authorities and organisations have been debating on how to strengthen the protection of cultural heritage from the growing natural and man-made risks that threaten it. Although this helped ignite the debate, demonstrating the urgency of addressing all related issues, the results were very fragmented which in turn inhibited a clear-cut institutional stance, perhaps because they came about through conventional and largely non-formal processes.

Against this backdrop, at European level, a path has been set first by [PROMEDHE](#) (2016-2018), then by [PROCULTHER](#) (2019-2021) and currently by the [PROCULTHER-NET](#) (2022-2023) EU-funded projects to provide a sound working basis to define a common language and approach, useful to build technical and operational capacities in this field. In particular, in order to address these pressing challenges,

the PROCULTHER project launched a broad consultative process to assess and analyse existing capacities in terms of cultural heritage protection in order to develop, in the framework of the Union Civil Protection Mechanism (UCPM), the document entitled “[Key elements of a European Methodology to Address the Protection of Cultural Heritage during Emergencies](#)”.

The purpose of this document is to promote a stronger and more effective protection of cultural heritage at risk by building on a common and shared understanding of the subject at European level and providing a solid basis for institutional strengthening and capacity building by capitalizing on the experiences and competences gained in this field by the following countries and organizations: Italy, France, Spain, Turkey, ICCROM, also including Cyprus, Jordan, Israel and Palestine, PROMEDHE partners, and other countries and organizations involved as extra-consortium partners in the project.

In this sense, this document aims at providing key operational and technical elements to address cultural heritage at risk of disaster, offering an overview of the main actions, considered as key by the actors involved in the project for the inclusion of cultural heritage safeguard in disaster risk management processes at both national and European level.

In order to achieve a result acknowledged as a common tool at European level, what emerged was the need to adopt a methodological approach as well as a working environment mainly based on:

- a. Inputs, feedback and continuous exchanges among countries and organizations working in this field who contributed to the development of the study by establishing national working groups to allow the effective adoption of a bottom-up approach and to elaborate a document-product containing the consensus generated at each national level.
- b. Establishment of a formal interdisciplinary link mainly among Civil Protection/Disaster risk management and Cultural affairs authorities/agencies.
- c. Definition of a scaling-up process able to reach not only UCPM Member and Participating States but also main European institutions, in particular [DG ECHO](#), [DG EAC](#) and [EEAS](#).

The “Key Elements” of the document thus converge from different approaches and perspectives at sectoral and territorial level around the following objectives agreed upon by all the actors involved in the project:

1. Provide technical and operational inputs to achieve a sustainable, coordinated, and holistic inclusion of cultural heritage protection in disaster risk management processes at national and European level.
2. Improve the effectiveness and efficiency of the Union Civil Protection Mechanism by bridging the increasing need of encouraging cross-sectoral cooperation among disaster risk managers, cultural heritage actors and knowledge holders to reinforce the resilience of vulnerable cultural heritage.
3. Elaborate terms of reference, legal arrangements and guidelines for the setting-up of a UCPM team able to reinforce disaster preparedness and, in case of emergency, to support national response actions of affected or at risk countries.<sup>22</sup>
4. Increase international dialogue on the importance of establishing a cross-sectoral and inter-agency approach to the subject, as well as to enable the adoption of a multi-risk approach also aimed at reducing cascading effects and other risks.
5. Define learning processes that can make the enhancement of cultural heritage resilience a common goal of the UCPM Member and Participating States, so as to sustain the establishment of an effective risk governance specifically dedicated to cultural heritage at each national level, and at the same time increase interoperability standards within the operational structures of the UCPM.

---

<sup>22</sup> For more details also see: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=COM:2022:709:FIN>

6. Propose shared reference standards, mechanisms, strategies, plans agreed with all the actors involved in disaster risk management phases and based on adequate risk-informed processes, synergistically combined and optimized at European level.

In particular, the document proposes and analyses, chapter by chapter, the following topics:

**Institutional framework (Chapter A)** focuses on main international regulatory and operational frameworks, actors to be involved and roles, as well as elements for strengthening a cultural heritage governance both at national and European level. First, it is crucial to set up an effective risk governance specifically dedicated to cultural heritage, able to establish shared mechanisms, strategies, plans and to guarantee appropriate financial and technical resources to ensure high level of compliance in a sustainable way. Second, the protection of cultural heritage at risk of disaster implies the recognition of the actors operating in the emergency response phase, based on the functions and competences established at each territorial level. Their involvement should be ensured in all disaster risk management phases and formalized with the actors responsible for cultural heritage. On the one hand, a strong connection between disaster risk management actors and cultural affairs authority is essential both at central and peripheral level. On the other hand, cultural heritage professionals, civil society and volunteers drawn from local communities also play a key role in emergency response operations dealing with cultural heritage. Therefore, their capacities should be enhanced to ensure effective disaster management operations, as well as contributing, in the prevention phase, to define and implement context-based approaches, raise public and political awareness and support local authorities in implementing cultural heritage emergency plans. In parallel, the scientific-academic community and international organizations play an important role in the safeguard of movable, immovable and intangible cultural assets. Strengthening synergies among relevant actors can also be useful in the preparedness phase to guarantee a fruitful capitalisation on existing best practices and lessons learnt to fine-tune methodologies and standard operating procedures, allowing an adequate learning process at national and international level for better protecting cultural heritage in emergency.

**Including cultural heritage in planning processes (Chapter B)** provides strategic methodological and operational inputs for the inclusion of cultural heritage in disaster risk management planning processes.

One of the main challenges for the effectiveness of a Disaster Risk Management plan is the lack of coordination between the cultural heritage site management system and the organizational set-up, policies, and procedures for disaster management in the municipality or region in which the property is located. In order to make a plan effective also in terms of safeguarding cultural heritage, it is crucial to ensure a continuous and constant coordination between the general Disaster Risk Management plan itself (DRM plan), which deals with all possible disaster risks existing in the territory and the various emergency site plans of cultural heritage buildings (museums, libraries, monuments, etc.). Therefore, the two levels, that is, the DRM-plan and cultural heritage-site security plan should be integrated. Ideally, the overall DRM-plan should include, among the other sectors dealing with emergency operations (for example health, operability of essential services, population evacuation and transport) also a specific section

dedicated to the disaster risk management of cultural heritage: the Disaster Risk Management-Cultural Heritage Sector Plan (DRM-CH plan), which should provide specific information on the identification of cultural heritage at risk and the measures to prevent or mitigate the consequences of disaster. The specific cultural heritage site security plans (CH-site plans) should be coordinated with the DRM-CH plan and tested so as to be consistent with the actions undertaken at local/regional/national level.

In this chapter, an outline to guide the development of the cultural heritage sector plan and site security plans has been developed, together with key operational planning elements, aiming at identifying potential damages caused by natural hazards, adapting early warning systems to the sector’s needs, defining priorities for the protection/extraction/removal of cultural heritage in emergency and identifying and organizing adequate storages for movable assets.

**Coordination structure and supporting team (Chapter C)** emphasizes the role that a coordination structure, identified as “Safeguarding Cultural Heritage Cell” (CH Cell), can have within an emergency operational centre in improving disaster risk management capacities.

Since specific expertise is needed to intervene in cultural heritage protection, the definition of a cell is crucial to coordinate operations related to the safeguard of cultural heritage in emergency, ensuring the necessary interdisciplinary and intersectoral coordination, as well as the involvement of all relevant actors, including local communities. The CH Cell provides the liaison and connection between the Emergency Coordination Centre and the competent Administration for cultural heritage both at the central and local levels, for census activities, damage relief, securing cultural buildings and assets, possible removal and relocation of the cultural assets present in the stricken area. The cultural heritage authority in coordination with the disaster risk management authority should specify procedures for the management of those activities, in synergy with all actors involved in the protection of cultural heritage in emergency. In this sense, it is necessary to identify actors and responsible bodies involved in the protection of cultural heritage and to assign them appropriate tasks.

It also focuses on the establishment of objectives, rules and procedures of a team, to be converted in a Module/Other Response capacities within the UCPM framework, to ensure the safeguard of cultural heritage at European and international level in case of emergency.



*The expert hands of a restorer classify the cultural assets recovered from Norcia's historical archives after the earthquake in Central Italy (2016) © DPC*

**Tools and data management system (Chapter D)** proposes reporting tools for risk and damage assessments, as well as approaches to be followed for an effective data and information management to better inform decision making processes. The proposed templates have been drafted taking into consideration existing forms and sheets, fed by the main lessons learnt gained during recent emergencies and exercises. These have been conceived as a minimum standard to support countries to conduct effective and holistic assessments on the damages that can affect tangible and intangible cultural assets. At the same time, they are intended to guide the operations of a UCPM-driven cultural heritage team, involved upon request during post disaster phases, to support those countries in the collection of useful information to promptly define protection and recovery measures. The proposed templates could also be used as a standard model to support the assessment where other standard models are not available and can be adapted to the needs of local authorities or, even in contexts where other templates/forms/worksheets are in use and be adapted to the needs of local authorities.

**Training (Chapter E)** deals with the definition of training standards related to the safeguard of cultural heritage at risk of disaster to be possibly included under the learning structures of the UCPM, in order to strengthen and test capacities in this field. Therefore, an advanced course for disaster risk management and cultural heritage experts working on the protection of both tangible and intangible cultural heritage is proposed, aiming at sharing and testing procedures and languages.

The course had a duration of approximately 40 hours and it is organized in 7 full-day modules: A - Civil Protection and Cultural Heritage: Institutional and Legal Framework (rules, actors, roles); B.1- International missions: phases of the activation practical issues; B.2- Types of mission (Assessment, Advisory, Post-Recovery); C - OPERATIONAL ISSUES (logistics, info management, media, ICT); D.1 - SECURING CULTURAL HERITAGE (context, structural issues, forms, practice); D.2- SECURING CULTURAL HERITAGE (cultural heritage assets typologies, first aid, templates, practice); E - EXERCISE AND EVALUATION (practical drill, final test).

**Exercises (Chapter F)** advocates on the importance of testing capacities to improve the safeguard of cultural heritage at risk of disaster. Exercises related to the protection of cultural heritage are often lacking in disaster risk management contexts. However, they are essential to reduce the risk of disaster in this sector. They aim to verify what is reported in the DRM planning at different territorial levels, by testing the validity of organizational and intervention models, as well as to promote the dissemination of the contents of the DRM plans to all those involved and raise awareness at community level on the importance of being prepared before a disaster strikes. The exercise process includes in its entirety the organization and planning of activities aimed at achieving not only the operational phase but also all related initiatives, including operational actions, training, dissemination of knowledge, evaluation, and implementation of results. In this sense, the chapter proposes an outline to facilitate the organization of cultural heritage full-scale exercises and a list of materials that can serve for the preparation of a dedicated risk-scenario.

Finally, to provide for specific references and further analysis, the document also includes a few Recommendations and actions related to the previous topics, to be undertaken to achieve an effective protection of cultural heritage at risk of disaster (**Chapter G**), a Glossary and case studies on the practices already developed by the PROCULTHER partners in terms of institutional framework, planning, coordinated structure and teams.

As seen from the array of topics covered by the document, this does not claim to exhaust all issues related to the protection of cultural heritage at risk, but proposes methods, languages, rules, minimum reference standards resulting from the learning and capitalisation processes initiated by the PROCULTHER project towards the promotion of a holistic and sustainable inclusion of cultural heritage protection in disaster risk management to be further explored and enhanced in the future.

Furthermore, while collaboration with disaster risk management and heritage authorities/agencies was crucial in identifying technical and operational elements, enabling a stronger link between relief, rehabilitation and sustainable development, this is also a key asset of the document that makes it unique in its kind internationally. At the same time, the fact of having investigated a common knowledge base, classified as established practice by the proposing country, can be useful both from the point of view of adoption and replicability of practices, and in terms of monitoring and further improvement of capitalisation processes from a more contextual perspective.



From the development of this document, we have learnt how the protection of cultural heritage at risk has not always been adequately considered and how much more needs to be done to ensure shared risk management models. In this sense, it is expected that the contents and application elements relating to damage assessment forms and innovation in terms of methodologies for the collection of geographical data, as well as the inclusion of new risks - in particular those related to epidemiological and anthropogenic risks experienced in the last year - can be further explored and adapted. It is also envisaged that civil society and private entities will be more involved in the definition of new content to also cover and further develop useful tools to ensure business continuity even in the event of disasters and crises. At the same time, a better linkage will be created also to improve the protection of cultural heritage in crisis or complex political emergency contexts.

In addition, the protection of cultural heritage is a constantly evolving subject that also needs to be consistently updated in relation to the institutional and societal evolution. In this sense, considerable outputs are expected from the strategies that the European Union is developing in this framework, as well as from the sharing of experiences and practices and the growing exchange that will be defined by the thematic community specifically dedicated to the protection of cultural heritage within the Union Civil Protection Knowledge Network and initiated by the PROCULTHER-NET project, which we are confident will lead to a new evolution of the tools and methodology made available so far.

# FOCUS ON

## “KulturGutRetter (KGR): technical characteristics of a cultural heritage response unit”

---

*By Constance Domenech de Cellès, Research Associate - KulturGutRetter, German Archaeological Institute, and Nils Jakubeit, Project Manager, Federal Agency for Technical Relief*

Rapid intervention, integrated processes and standard operating procedures (SOPs) are key in safeguarding movable and immovable cultural heritage in case of disaster. This is why interoperability between the technical capacities and field experience of civil protection and the expertise of cultural heritage professionals is at the heart of an efficient response operation. However, recent catastrophes such as the summer 2021 floods in Belgium and Germany have yet again shown that, although coordination between those two worlds is essential, it remains difficult to implement it on the ground, especially when procedures, timeframes and even vocabulary differ.

The project [KulturGutRetter](#) (KGR – Cultural Heritage Response Unit) is designed to unite civil protection capacities and cultural heritage know-how into a single unit to provide emergency support to cultural heritage hit by natural hazards, anywhere in the world. It relies on three founding partners, working together since the conception phase in 2019, in order to develop a fully integrated capacity. The [Federal Agency for Technical Relief](#) (THW) harnesses its expertise in crisis situation management, logistics and international intervention. The [Leibniz Centre for Archaeology](#) (LEIZA) mobilizes its knowledge in the safeguarding of movable cultural heritage. Finally, know-how in the preservation of immovable cultural heritage, IT developments and project management and coordination is provided by the [German Archaeological Institute](#) (DAI).

The purpose of KulturGutRetter is to be deployable worldwide to provide emergency assistance to cultural heritage, in the first days after a disaster caused by natural hazards and man-made disasters. Through the provision of experts and equipment, the unit will cover the tasks of damage assessment, evacuation of and emergency intervention on movable heritage, stabilisation of immovable heritage. As a self-sufficient unit intended for interventions abroad, KGR focuses on upholding European and international standards and on fostering interoperability with other emergency actors on the ground – whether they belong to the civil protection or the cultural heritage sector. In order to meet that goal, KGR is developing a team structure, dedicated equipment and standard operating procedures.

### TEAM STRUCTURE

**On the ground.** Integration is the motto of KGR. Its team structure is thus based on the one designed by THW for its international emergency relief deployments, in which expertise dedicated to the rescue and salvage of cultural heritage is injected. This allows professionals coming from both the civil protection and the cultural heritage fields to work together under the same united line of command.

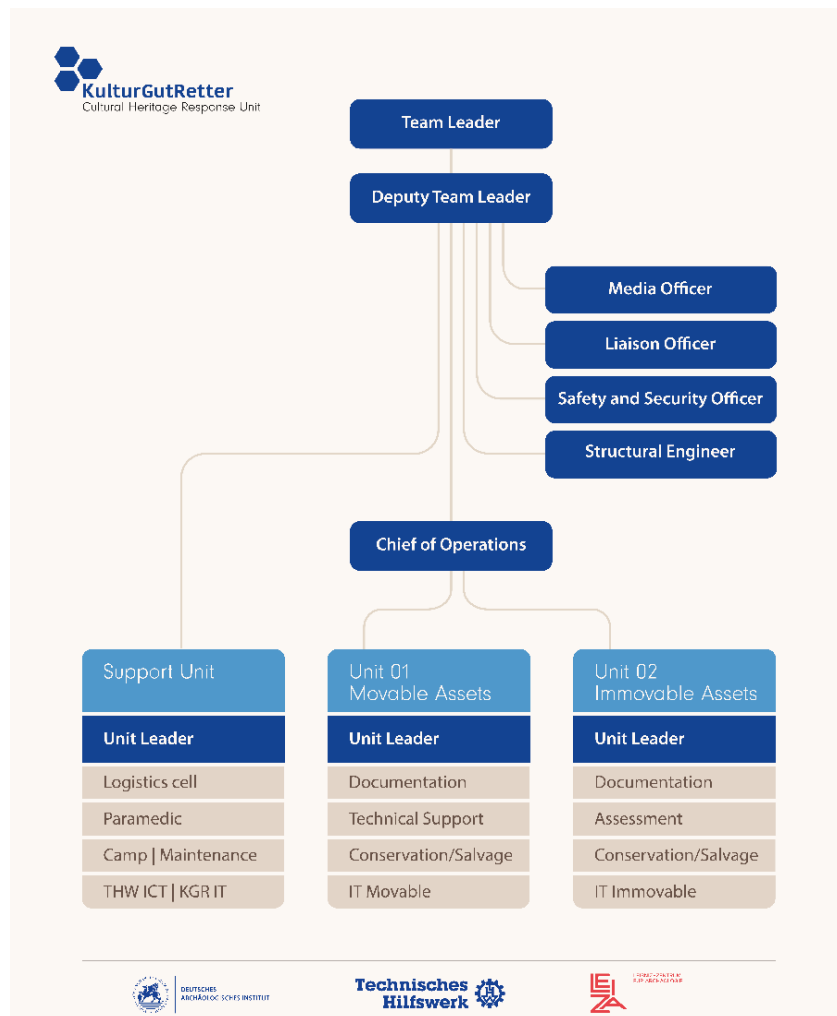
Tasks and requirements are being defined for each function within the team.

The on-site Team Leader (generally coming from THW) reports to the joint background staff coming together at the operation centre at the THW HQs facility. This background staff, being responsible for the overall mission, is supported by different experts in Germany, depending on the emergency. He/she is assisted by a deputy Team Leader and supervises:

- a Media Officer
- a support Unit (logistics cell, THW ICT, Paramedic, Camp/Maintenance, KGR-IT)
- Liaison Officer(s)
- Safety & Security
- Structural Engineer(s)
- a Chief of Operations, who is in charge of the specialised cultural heritage units:
  - o Unit 1 - Movable heritage (unit leader, documentation, technical support, conservators, object logistics staff)
  - o Unit 2 - Immovable heritage (unit leader, documentation staff, assessment staff, conservators, IT-Immovable staff)
  - o KGR-IT – the IT-team, composed of an IT-leader and IT-staff, is split between the Support Unit, and the Movable Heritage and Immovable Heritage Units.

Depending on the nature of the response mission, it will be possible to add further units, such as a Rapid Deployment Water Supply (SEEWA) module, or a unit of local partners and volunteers.

The size of the unit can range between 5 persons for a first assessment team, to up to 40 people for the core-team and up to 90 people including local support.



KGR Team Structure ©M.Pasternak, DAI

**Network of experts.** In order to have the right expertise on-hand when an emergency strikes, KGR is developing a network of professionals from different specialities (restorers, engineers, curators, archaeologists, technical advisors...). Profiles are being defined, setting out specific requirements for each field of expertise. Administrative, legal, insurance and medical issues for international interventions will as much as possible be processed upstream. The goal is to have a vetted database of ready-to-deploy experts, to complement the core-team of KGR according to the needs of each emergency.

**Training.** A common training program is currently being designed for both cultural and civil protection experts that will be part of the KGR network, in order to ensure a minimal shared knowledge and mutual understanding. THW staff that are deployed within the KGR unit have followed the THW basic training for international missions, which focuses on the procedures and principles of international missions, partners and actors, safety and security, coordination procedures. Moreover, regular trainings and exercises will be organised to keep the team operational and up-to-date with standards.

## EQUIPMENT AND LOGISTICS

**General camp infrastructure.** As any international emergency relief module, KGR is designed to be a self-sufficient, autonomous unit. The core equipment and logistics deployed for KGR are directly linked to the ones used by THW for its civil protection mission. As in all THW international deployment, the components of the Base of Operations for the KGR unit can be scaled according to the size of the mission. One Camp Unit includes:

- Kitchen tent (incl. meals ready to eat as well as bottled water)
- Sleeping tents (incl. camping beds, sleeping bags and mosquito domes)
- Office/residence tent (incl. tables)
- Shower (incl. water heater)
- Mobile toilets (incl. basing)
- Generator, lightening and tools

Telecommunication and IT-equipment, as well as medical equipment is also included.



*KGR – Experts working on the Mobile Lab at LEIZA © R.Müller, LEIZA*

**Specific equipment for cultural heritage.** In order to answer the specific focus of the KGR unit, additional equipment has been designed, that meets the needs of emergency interventions for cultural heritage while being compatible with the civil protection logistic requirements.

LEIZA has developed a light, modular table system to provide first care to movable heritage, into which different stations can be integrated as needed: dry-cleaning, wet-cleaning, photo-

documentation, packing of small objects<sup>23</sup>... A “unit” of this mobile conservation laboratory corresponds to a specific team size, and can be scaled as required. The elements can be stored in standard-size transport boxes, suitable for airplane transport, and easily assembled/disassembled using basic tools.

**IT backbone and data structure.** A robust, dedicated digital infrastructure is being developed, for all the phases of a KGR response mission. The goal is to have a structured package of data and digital documentation that can be used in the preparation phase leading up to the mission, in the field and for further processing after the end of the operation.

The pre-existing information on the affected site (photos, floorplans, inventories, GIS-data...) is thus gathered and made available to the on-site experts through mobile devices. During the response operation, they will be able to collect their own data and document the actions undertaken, by using the same mobile devices and predefined digital forms. Thanks to the use of QR-codes, it will be possible to track the position and status of movable heritage. At the end of the mission, the structured data about the rescued cultural heritage will be handed over to the country and institution concerned and can be incorporated into existing data structures to contribute to its long-term care and maintenance.



*KGR - Damage Assessment with mobile devices, ©E.Götting, DAI*

KGR uses two apps, [iDAI.field](#) – developed in-house by the DAI for archaeological projects and further adapted for KGR’s needs – and Qfield, which are both open source software. They allow to collect data in the field in a quick and efficient manner, for both movable and immovable

---

<sup>23</sup> See more details in the article “Providing first-aid for movable cultural heritage: a modular table system”, p. 19 of Technical Bulletin #1

heritage. The apps provide highly structured data that allow easy synchronisation, exchanges of data with other apps, and processing of data at a later stage. The software is designed to be easily accessible to local personnel after a short training given through handbooks and/or video tutorials.

## STANDARD OPERATING PROCEDURES

**Activation mechanism and mobilisation of resources.** KGR will be activated after an official request for international assistance from the country hit by a disaster has been received by Germany, either bilaterally or through the European Union. Upon agreement of deploying KGR for this emergency, an alert will be sent to THW which will set forth with the activation process: contact of the core-team, message to the required experts from the network to confirm availability, mobilisation of resources and equipment.

**Coordination and communication.** The central coordination for a KGR mission will take place in the operation centre of THW in their Headquarters in Bonn, as it is done for any other international mission of THW. For a KGR mission the staff working in the operations centre will be jointly coming from THW, the DAI and LEIZA. This staff will be responsible for the overall mission and serves as a support for the field team. The support ranges from flight bookings to activating networks in the affected country to gathering expert knowledge on special cultural heritage issues. For this additional expert teams in Germany might be activated, depending on the questions from the field.

**Operations. Remote-sensing and emergency documentation:** The IT-team gathers information on the general situation and on the cultural heritage hit by the disaster through several sources (Copernicus, social media...). All available pre-existing information on the cultural heritage (architectural plans, photos, inventories...) is also collected and made ready to use. If necessary, a first assessment team composed of up to five persons can be deployed on the ground to better assess the needs for the full mission.

**Logistics for deployment:** THW has a Logistics Centre for missions abroad (ZAL) located near the airport Frankfurt/Main (FRA), where equipment for self-sufficiency and also the KGR specialised equipment will be stored.

**Minimal Standard Procedures (MSP):** MSPs are being developed to ensure that uniform and coordinated standards are followed by all team members, even when working in different locations. They describe three main phases for the handling of movable and immovable heritage:

- documentation of the condition (photographs, drawings, rapid 3D documentation...),
- assessment and prioritization of damage,
- implementation of first emergency measure (sorting, cleaning, emergency conservation and stabilisation measures, storage...)

These minimal procedures can then be adapted to the extent, type and scope of the situation and to the nature of the endangered cultural heritage. They guarantee the transparency of the procedures and the constant quality in the execution of measures.

*Hand-over and end of mission:* Once the cultural heritage is secured and stabilised thanks to first aid measures, it is handed-over to the competent authorities along with a transparent documentation of the steps taken. Recommendations for further actions will also be given and opportunities for capacity-building can be envisaged. After the end of the mission, a debriefing is organised to identify lessons learned and constantly improve the KGR capacity.

## NEXT STEPS TOWARDS EUROPEAN INTEGRATION

2023 is a pivotal year for KGR. Training and exercises are planned with the goal of developing the first operational capacities by end of the year. The involvement of two KGR partners – the DAI and THW – in the European project PROCULTHER-NET is an opportunity to further integrate the unit with European standards and to guarantee its interoperability with future developments of the European Union Civil Protection mechanism (UCPM). Since 2022, KGR has been working with the UCPM in the framework of the [Network for the Protection of Cultural Property in Ukraine](#), by delivering emergency support material to evacuate and protect cultural heritage. To continue on this pathway towards the integration of civil protection and cultural heritage protection, the KGR capacities could in the medium-term register in the CECIS database as available assets for emergency response for cultural heritage.



# LIST OF REFERENCES

- Climate.Culture.Peace <http://www.climateculturepeace.org/iccrom> [Last access 03/14/2023]
- Commission Implementing Decision 2014/762/EU or its subsequent amendment Commission Implementing Decision (EU) 2018/142 of 15 January 2018 OJ, L 25, 30 January 2018 <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32018D0142>
- Commission Implementing Decision (EU) 2018/142 of 15 January 2018 amending Implementing Decision 2014/762/EU laying down rules for the implementation of Decision No 1313/2013/EU of the European Parliament and of the Council on a Union Civil Protection Mechanism <https://eur-lex.europa.eu/legal-content/AUTO/?uri=CELEX:32018D0142&qid=1678786860870&rid=1>
- Conclusions, Working document of the European External Action Service of 12/09/2022 EEAS Reference EEAS(2022) 1556 <https://data.consilium.europa.eu/doc/document/ST-12398-2022-INIT/en/pdf>
- Confederation of Risk Reduction Professionals – CRRP <https://www.crrpindia.org> [Last access 03/14/2023]
- Consolidated version of the Treaty on the Functioning of the European Union, OJ, C 326, 26 October 2012, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12012E%2FTXT>
- Cross-Cultural Foundation of Uganda - CCFU <https://crossculturalfoundation.or.ug> [Last access 03/14/2023]
- Decision (EU) 2019/420 of the European Parliament and of the Council of 13 March 2019 amending Decision No 1313/2013/EU on a Union Civil Protection Mechanism <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019D0420>
- Decision No 1313/2013/EU of the European Parliament and of the Council of 17 December 2013 on a Union Civil Protection Mechanism Text with EEA relevance, OJ L 347, 20.12.2013 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013D1313>
- Egyptian Heritage Rescue Foundation - EHRF <http://www.ehrf-egypt.com> [Last access 03/14/2023]
- EU Civil Protection Mechanism Factsheet [https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/eu-civil-protection-mechanism\\_en#facts--figures](https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/eu-civil-protection-mechanism_en#facts--figures) [Last access 03/14/2023]
- European Commission Directorate-General for Education, Youth, Sport and Culture – EAC [https://commission.europa.eu/about-european-commission/departments-and-executive-agencies/education-youth-sport-and-culture\\_en](https://commission.europa.eu/about-european-commission/departments-and-executive-agencies/education-youth-sport-and-culture_en) [Last access 03/14/2023]

# LIST OF REFERENCES

European Commission Directorate General for Civil Protection and Humanitarian Aid Operations - DG ECHO <https://civil-protection-humanitarian-aid.ec.europa.eu/select-language?destination=/node/1> [Last access 03/14/2023]

European Union European External Action Service - EEAS [https://www.eeas.europa.eu/\\_en](https://www.eeas.europa.eu/_en) [Last access 03/14/2023]

FAIR Data Principles <https://force11.org/info/the-fair-data-principles> [Last access 03/14/2023]

Federal Agency for Technical Relief – THW [https://www.thw.de/EN/Homepage/homepage\\_node.html](https://www.thw.de/EN/Homepage/homepage_node.html) [Last access 03/14/2023]

Final Declaration of the Conference of the Ministers of Culture of the Euro-Mediterranean Region / EU Southern Partnership, Naples, 16-17 June 2022 [https://media.beniculturali.it/mibac/files/boards/be78e33bc8ca0c99bff70aa174035096/Card/medculture/PDF/MedCulture\\_FinalDeclaration\\_ENG1.pdf](https://media.beniculturali.it/mibac/files/boards/be78e33bc8ca0c99bff70aa174035096/Card/medculture/PDF/MedCulture_FinalDeclaration_ENG1.pdf) [Last access 03/14/2023]

Financing civil protection, European Commission, Directorate General for Civil Protection and Humanitarian Aid Operations [https://civil-protection-humanitarian-aid.ec.europa.eu/funding-evaluations/financing-civil-protection\\_en](https://civil-protection-humanitarian-aid.ec.europa.eu/funding-evaluations/financing-civil-protection_en) [Last access 03/14/2023]

First Aid and Resilience for Cultural Heritage in Times of Crisis (FAR) <https://www.iccrom.org/programmes/first-aid-and-resilience-times-crisis-far> [Last access 03/14/2023]

Geran Archaeological Institute - DAI <https://www.dainst.org/en/dai/meldungen> [Last access 03/14/2023]

Github platform <https://github.com/pcm-dpc/DPC-Centri-Storici-Rischio-Sismico> [Last access 03/14/2023]

KulturGutRetter (KGR) - Cultural Heritage Response Unit Project <https://www.kulturgutretter.org/en/home-2> [Last access 03/14/2023]

iDAI.field <https://tutorials.idai.world/login/index.php> [Last access 03/14/2023]

Internal displacement in a changing climate (IDMC), *Global Report on Internal Displacement*. 2021. <https://www.internal-displacement.org/publications/2021-global-report-on-internal-displacement> [Last access 03/14/2023]

International Search and Rescue Advisory Group (INSARAG) <https://www.insarag.org> [Last access 03/14/2023]

Leibniz Centre for Archaeology - LEIZA, formerly Roman-Germanic Central Museum <https://web.rgzm.de/en> [Last access 03/14/2023]

# LIST OF REFERENCES

*Linee guida per l'individuazione, l'adeguamento, la progettazione e l'allestimento di depositi per il ricovero temporaneo di beni culturali mobili con annessi laboratori di restauro*, General Directorate for Cultural Heritage Security of the Italian Ministry of Culture

<https://dgspatrimonioculturale.beniculturali.it/wp-content/uploads/2022/03/Allegato-%E2%80%93-Linee-guida-individuazione-adequamento-progettazione-e-allestimento-depositi-per-ricovero-temporaneo-di-beni-culturali-mobili-con-laboratori-di-restauro.pdf>

Nasce il progetto PON Itinerari Digitali – Italian Central Institute for Cataloguing and Documentation – ICCD website, 15/03/2022 <http://www.iccd.beniculturali.it/it/150/archivio-news/5173/nasce-il-progetto-pon-itinerari-digitali> [Last access 03/14/2023]

Net Zero: Heritage for Climate Action <https://www.iccrom.org/projects/net-zero-heritage-climate-action>

Network for the Protection of Cultural Property in Ukraine, PROCULTHER-NET Newsletter issue n. 1- December 2022 [https://civil-protection-knowledge-network.europa.eu/system/files/2022-07/PROCULTHER\\_NET\\_Newsletter\\_N1.pdf](https://civil-protection-knowledge-network.europa.eu/system/files/2022-07/PROCULTHER_NET_Newsletter_N1.pdf) [Last access 03/14/2023]

PROCULTHER Project. Key Elements of a European Methodology to Address the Protection of Cultural Heritage during Emergencies, Città di Castello: LuoghInteriori, 2021. ISBN 978-88-6864-370-6 <https://www.proculther.eu/wp-content/uploads/2022/06/PROCULTHER-Methodology.pdf>

PROCULTHER Project <https://www.proculther.eu> [Last access 03/14/2023]

PROCULTHER-NET Project <https://civil-protection-knowledge-network.europa.eu/projects/proculther-net> [Last access 03/14/2023]

PROMEDHE Project <https://www.montesca.eu/promedhe> [Last access 03/14/2023]

Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the cultural dimension of sustainable development in EU actions, Brussels, 9.12.2022 COM(2022) 709 final <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=COM:2022:709:FIN> [Last access 03/14/2023]

Report on the progress in the implementation of the “Concept on Cultural Heritage in conflicts and crises. A component for peace and security in European Union’s external action” and the dedicated Council, Working document of the European External Action Service of 12/09/2022, EEAS Reference EEAS(2022) 1556 <https://data.consilium.europa.eu/doc/document/ST-12398-2022-INIT/en/pdf> [Last access 03/14/2023]

Rome Declaration of the G20 Ministers of Culture, Rome, 29-30 July 2021 [https://media.beniculturali.it/mibac/files/boards/be78e33bc8ca0c99bfff70aa174035096/PDF/DichiarazioneFinale\\_G20\\_ENG.pdf](https://media.beniculturali.it/mibac/files/boards/be78e33bc8ca0c99bfff70aa174035096/PDF/DichiarazioneFinale_G20_ENG.pdf) [Last access 03/14/2023]

# LIST OF REFERENCES

Risk & Resilience Institute - RRI <https://www.facebook.com/resilientearth.rrl/> [Last access 03/14/2023]

Swedish Postcode Foundation <https://postkodstiftelsen.se/en/about-the-postcode-foundation> [Last access 03/14/2023]

University State of Campinas UNICAMP <https://www.unicamp.br/unicamp/english> [Last access 03/14/2023]

Ukraine Factsheet, European Commission, Directorate General for Civil Protection and Humanitarian Aid Operations [https://civil-protection-humanitarian-aid.ec.europa.eu/where/europe/ukraine\\_en#facts--figures](https://civil-protection-humanitarian-aid.ec.europa.eu/where/europe/ukraine_en#facts--figures) [Last access 03/14/2023]

# PROCULTHER-NET CONSORTIUM



Join the PROCULTHER-NET Community within  
the Union Civil Protection Knowledge Network!

CONNECT

SHARE

GROW

## PROCULTHER-NET

Italian Presidency of the Council of Ministers - Civil Protection Department  
via Ulpiano, 11  
00193 Rome (Italy)

[proculther-net@protezionecivile.it](mailto:proculther-net@protezionecivile.it)

<https://civil-protection-knowledge-network.europa.eu/projects/proculther-net>

### STAY TUNED!

Find @ProcultherP



*This publication covers humanitarian aid activities implemented with the financial assistance of the European Union. The views expressed herein should not be taken, in any way, to reflect the official opinion of the European Union, and the European Commission is not responsible for any use that may be made of the information it contains*

*#ProcultherNet #CivProKnowNet #EuCivPro #Union #CivilProtection  
#Mechanism #CulturalHeritage*