Action 8

Guiding Principles for Resilience and Integrated Approaches in Risk and Heritage Management in European Cities

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1) Who we Are

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*The work process in this **action** takes place at different levels:*

1. *Action Leadership*

*The Action Lead is carried out by the BMWSB in cooperation with the BBSR. The **Action Leaders** have designed the main working modules for the action and coordinate and communicate the process.*

2. *Action Group*

The interdisciplinary Action Group of European experts gives strategic guidance on the key topics of the action's development and provides feedback for the action's implementation. Regular meetings of the action group help to deepen and elaborate key findings within the action.
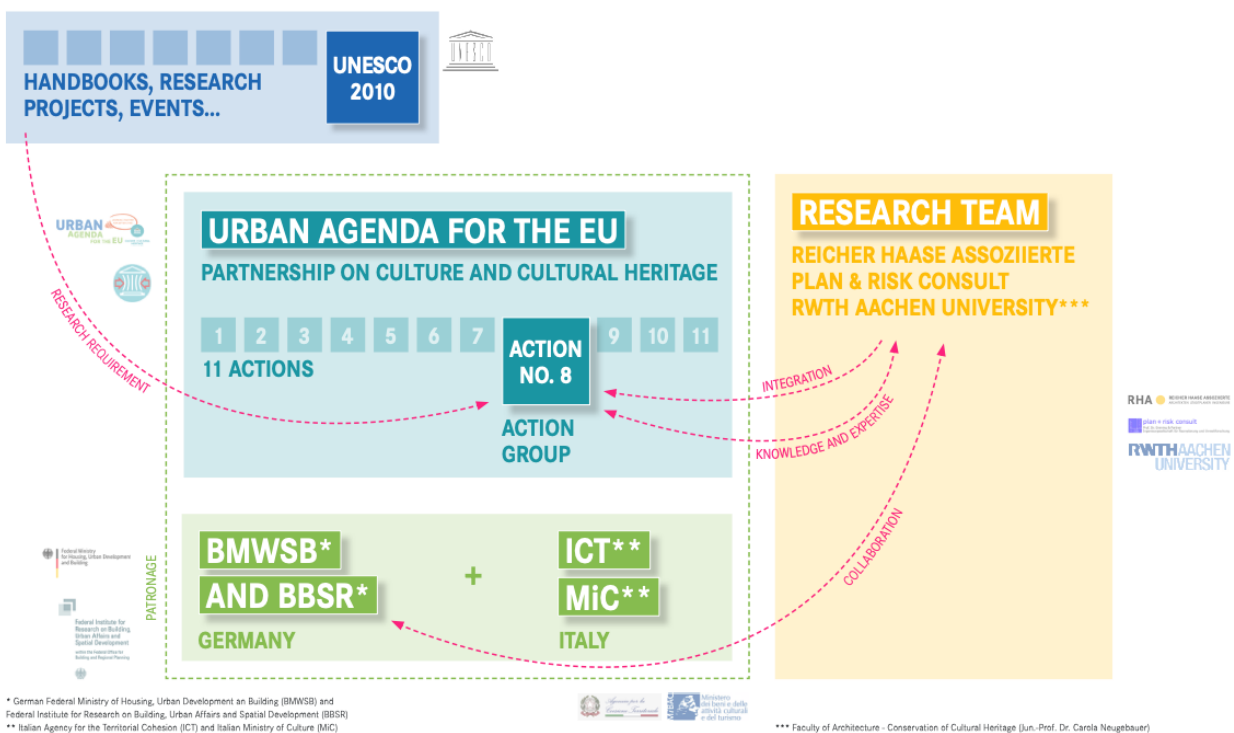
3. *Research Project (ExWoSt)*

*Finally, the BBSR commissioned an interdisciplinary consortium of German scientists, managers, and planners, hereafter referred to as the **"research team"**, to accompany the action and elaborate the results in a research project from January 2021 to July 2022. The research project "Resilience and Cultural Heritage" deals intensively with the risks and threats to the built cultural heritage as well as with integrated approaches for action – both existing approaches and those to be established. The scope of the research project is two-fold: The project's first part focuses on the European context, the second transfers the insights and results to the national German context and local practice.*

The research team consists of members of the offices REICHER HAASE ASSOZIIERTE and Plan + Risk Consult as well as the Faculty of Architecture at RWTH Aachen University (Chair of Safeguarding Cultural Heritage). The research project is part of the Experimental Housing and Urban Development funding program (ExWoSt) at the BBSR.

The research team works closely with and supports the Action Group through its scientific work and organizational activities. In return, the Action Group supports the work of the research team by commenting on and validating the results and the scientific approach within the research project. The central concern of the research project is to analyse and evaluate existing approaches in risk management (RM) and cultural heritage conservation / management and the integration of the two, as well as to showcase good European examples for integrated approaches. On this basis, an exchange between the relevant actors was initiated in order to develop guidelines and recommendations for the future handling to promote an integrated way of working in the field of RM for cultural heritage, both on a European and national level.

Overview of the stakeholders involved in the context of the research project and the Action Group © RHA

2) Background context

Urban heritage often helps to shape collective identities, to create a sense of belonging within urban communities and to mobilize civil society. Furthermore, cultural heritage is the outcome of a long-term emerging and adapting development and already exists for hundreds if not thousands of years, and has withstood hazards and threats.

Despite being a source of resilience, cultural heritage is nevertheless particularly vulnerable in its existence: Due to its characteristics like aging, the state of conservation, etc., cultural heritage can also hold a certain amount of vulnerability.

A wide range of hazards of various origins increasingly endangers urban and rural areas: among them disasters and crises, progressively accelerated by the ongoing climate change; human-made threats like wars, as well as economic pitfalls and epidemics. Furthermore, the never before seen threat from climate change and other human-induced hazards can threaten even the most resilient cultural heritage. In addition, the loss of cultural heritage can be particularly severe due to its high immaterial value. As a result, the cultural heritage needs to be protected and adapted.

Cultural heritage has proven to be a valuable resource for many communities to deal with those hazards and to significantly contribute to initiating and raising resilience of cities and their inhabitants. For example, during the major flood in the summer of 2021, the historic city wall in Bad Münstereifel, Germany, was able to intercept large amounts of water and thus made a significant contribution to protecting the inner old town centre from major damage. So cultural heritage itself already has proven to be resilient to a certain extend. With this major role in urban resilience, cultural heritage can make contributions to every stage of the so-called Risk Management (RM) cycle.

In addition, the intrinsic resilience of historic environments should also be noted: Vernacular and traditional architecture can be used as catalyser of a heritage-led resilience to enhance the resilience of historic environments, exploiting their inherent resilience characteristics, such as self-learning capacities, circular economy approaches, redundancy of parts, reparability and reuse of components, traditional adaptation strategies, intrinsic sustainability, and multi-stakeholder integration.

On major challenge of RM focusing on cultural heritage is the limited capacity of changes and measures to improve the adaptability of existing buildings and urban structures due to their preservation value of original substance. To enhance the significance of cultural heritage for the resilience of urban sites, it is important to understand the specific risks those environments face, in order to mitigate the risk of a disaster happening, as well as to prepare a response and recovery in case one occurs. Existing approaches such as the RM cycle and the methodology of the SHELTER project[1] can offer valuable frameworks and perspectives.

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[1] The SHELTER project aims to develop a data driven and community-based knowledge framework that brings together the scientific community and heritage managers with the objective of increasing resilience, reducing vulnerability and promoting better and safer reconstruction in Historic Areas. All the developments of the project are validated in five open-labs, representative of main climatic and

Improve resilience against disasters and crises, which is understood as reducing disaster risk, should be developed before a disaster happens (rather than only as a reaction to it) and also during recovery after a crisis, following the concept of "building back better".[2]

This strengthening of resilience in advance of crises is of high political importance for the EU and to member states. Many cities in Europe have developed DRM (disaster risk management) plans in order to reduce risks and increase disaster preparedness. However, these plans rarely take into account the importance and complexity of urban built heritage. Often, the urban heritage's potential to strengthen the urban resilience is overlooked or underestimated. On the other hand, urban heritage management, along with urban development plans, often do not consider probable disaster risk situations. In general, **there is often no sufficient link between the fields of risk management and cultural heritage management. The major concern of this action is to evaluate this link and to designate possible measures to strengthen it. Thus, the action aims to contribute to the development of an effective integrated approach to risk and cultural heritage management in European cities.**
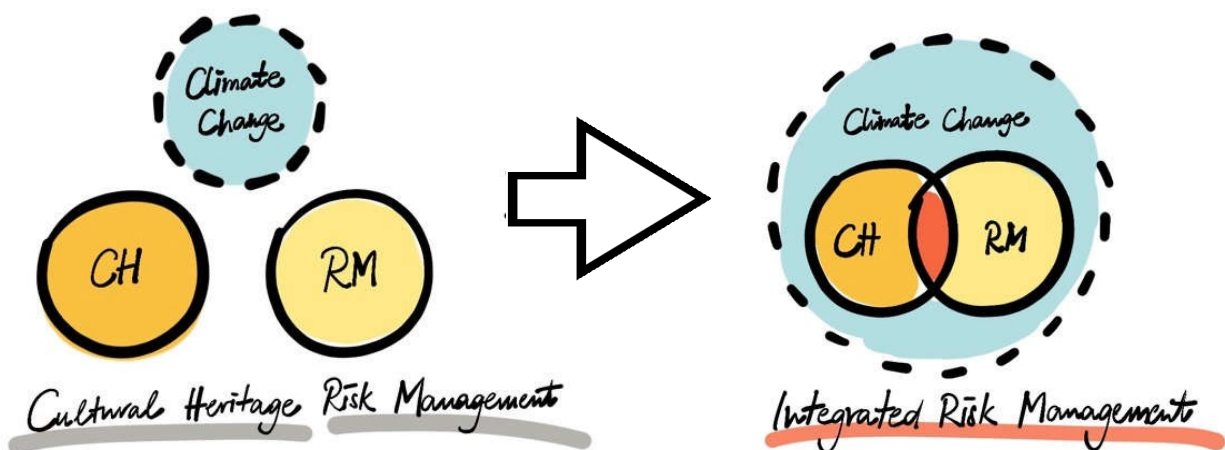
Venn diagram illustrating the relationship of climate change and cultural heritage/risk management. © for all drawings: RHA

environmental challenges in Europe and different heritage's typologies. More information at https://shelter-project.com.

[2] As a reference, please see the following UNESCO/Worldbank publication:
   https://openknowledge.worldbank.org/handle/10986/30733

3)   Objectives

The action's point of departure was the UNESCO World Heritage Resource Manual „Managing Disaster Risks for World Heritage". The action's goal has been to adapt the principles from this publication to the European context and to develop Guiding Principles for Resilience and Integrated Approaches in Risk and Heritage Management in European Cities. Its further goal is to develop a knowledge base, e.g. on good practices in risk and heritage management, and to make it available in an easily accessible *Guidance Paper* for municipal practitioners in European cities, and to formulate recommendations for the EU Commission on how to promote and maintain the above-mentioned integrated approaches.

The main objectives of the action are:

- To promote better coordination, cooperation and understanding between relevant planning departments, institutions at all levels of governance, heritage experts, DRM agencies and experts, the fields of research and academia, other relevant professionals as well as civil society.
- To develop integrated strategies in the field of heritage management to reduce possible risks for urban built heritage.
- To promote the integration of urban built heritage into DRM, climate change or environmental plans and policies at the local level and vice versa
- Following up on the capacity building described above, to establish guiding principles for local authorities in charge and other relevant actors – including local residents – on how to develop and implement integrated approaches in the field of risk and heritage management in European cities.
- To foster the implementation of integrated approaches in the fields of urban built heritage and risk management in European cities – considering questions like: Who would do so? At which level? How and with which resources/knowledge?)

Further objectives formulated by some members of the Action Group are:

- To **'increase resilience'** in addition to 'reduce risks' (e.g., to develop strategies to reduce possible risks and increase resilience for the urban built heritage in the field of heritage management)
- To **raise awareness on how urban heritage can be a factor for increasing resilience of the community.**
- To **increase cultural heritage resilience against climate change-related disasters**, and to support the process of **response-capacity building** for local stakeholders.
- To ensure a **stronger awareness among Cultural Heritage stakeholders** of disaster risks and concerned international guidelines (such as the Sendai Framework for Disaster Risk Reduction (UNDRR)).

4) Results and main outcomes

The research project "Resilience and Architectural Heritage" specified the framework and approach in dialogue with the Action Group:

- An all-hazards approach is applied, which includes all hazards to cultural heritage defined by UNESCO (meteorological hazards, hydrological hazards, astrophysical hazards, biological hazards, antrophogenic hazards, climate change, geo-hazards like earthquakes and volcanoes and fire, one of the key threats to many cultural heritage assets).[3] This is mainly based on the existing approaches in disaster management, which also takes a **multi-perspective hazard approach**, and also on the proven interactions and interdependencies of the individual hazards.

- It takes a holistic approach to cultural heritage, considering the close links between nature and culture, tangible and intangible assets, and objects and places. Here, both formally protected monuments and structures worthy of preservation are included.

- All phases of disaster risk management are considered. Therefore, a risk management cycle has been developed as part of the Action Group and research project work that addresses the four phases of risk consideration. These overall four phases **Prevention, Preparedness, Response, Recovery**, stem from RM and were adopted as part of the SHELTER project. They have been taken up here.

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[3] UNDRR (2021): Hazard Information Profiles, pp. 6. https://www.undrr.org/publication/hazard-information-profiles-supplement-undrr-isc-hazard-definition-classification . See also: UNESCO (2010): Katastrophenschutz an Welterbestätten, pp. 12. URL: https://www.unesco.de/sites/default/files/2018-01/Katastrophenschutz.pdf.
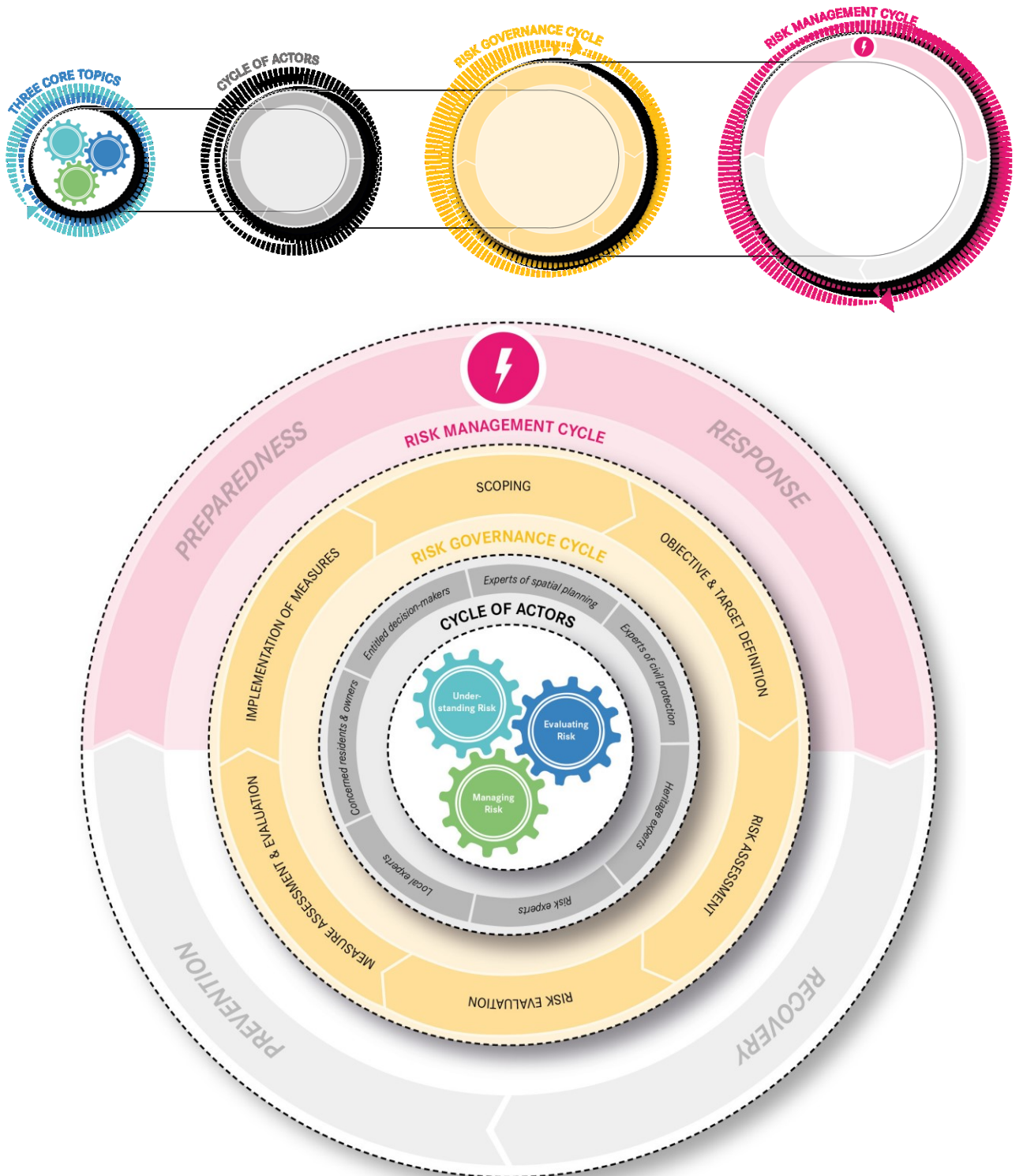
Figure of the Risk Management Cycle with the four phases Prevention, Preparedness, Response, Recovery (cf. SHELTER) as well as the interdependencies and interlocking factual and normative steps. Steps and processes are interdependent and build on each other. It is important to understand that the speeds of the phases, processes and procedures vary - metaphorically speaking, the individual cycles rotate at different speeds. While the „disaster" is a key moment and thus at the top, the phases of Risk Identification and Risk Reduction are equally relevant. © RHA

Working steps of the action and outputs:

- **Scoping Paper**: It contains the initial knowledge base: Ten existing documents, issued by international organisations from UNESCO and ICOMOS to EDUCEN and INTERREG Central Europe, and four European projects (SHELTER, ARCH, ProCultHer, AtlaS-World Heritage), all dealing with integrated approaches in the field of risk heritage management, were analysed and processed according to a research matrix and summarized in a "Scoping Paper" (finished in April 2021).

- **Evaluation of existing European practices**: Ten best practices[4] from Europe were evaluated, and seventeen guided interviews with European experts[5] from various levels of heritage and risk management were conducted digitally. The evaluation demonstrated challenges and opportunities in developing an integrated approach; evaluated existing regulations and measures; defined strategies and tools to strengthen the linkage between the built heritage and RM; and detect which new partnerships or cooperations are needed. These examples were characterized by means of short profiles and their content will be presented again as examples in the Guidance Paper, which will be published as part of the research project in the spring of 2022.

City excursion during expert workshop, Bordeaux, September 2021. © RHA

- **Expert Workshop in Bordeaux** (and online) in September 2021: Upon the invitation of the BBSR and the BMWSB, the findings of the Scoping Paper were presented to and intensively discussed with about 25 international experts from different levels of heritage and RM, along with representatives of local and regional governments, and members of their international networks. The discussions emphasized, among other points, the particular importance of the involvement of local stakeholders and revealed the urgency to regulate and improve the communication between the fields of risk and heritage management as well as between different levels within the fields. The necessity to encourage stakeholders and political agents to act before and not only in the aftermath of a crisis became especially poignant during the discussions.

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[4] Paris (France), Grimma (Germany), Regensburg (Germany), Tonsberg (Norway), Venice (Italy), Pompeji (Italy), Mikulov (Czech Republic), Bratislava (Slovakia), Vukovar (Croatia), Mostar (Bosnia-Herzegovina). The short Project profiles can be found in the Annex.

[5] See the detailed list of interviewed partners and institutions in the Annex.
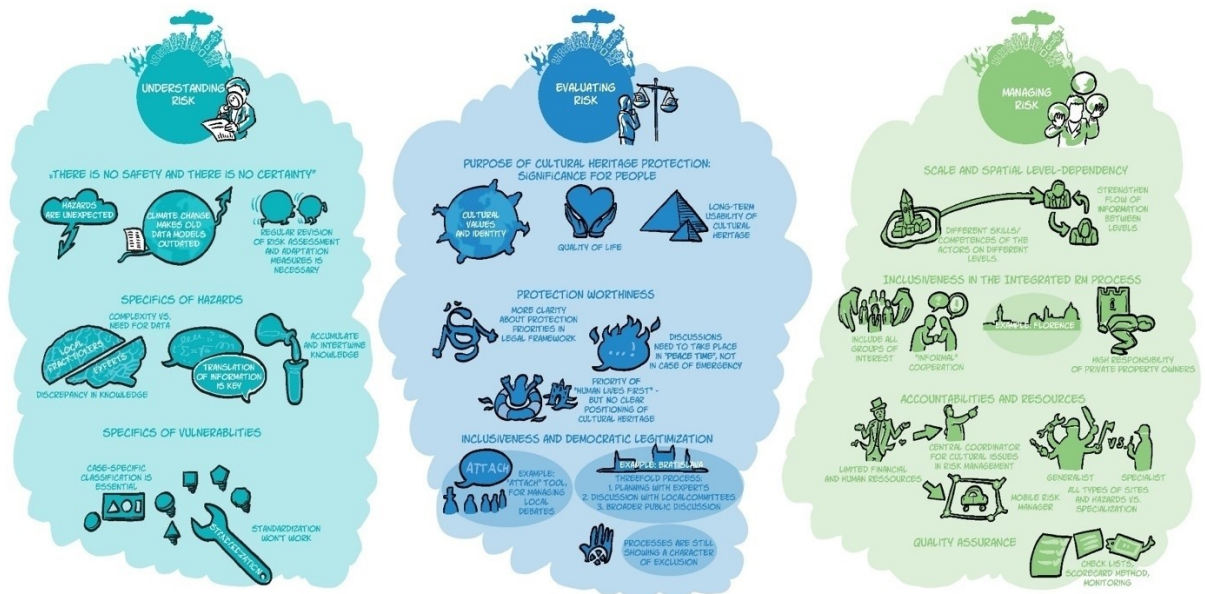
Graphic recording – visualization of key points of discussion during the expert workshop in Bordeaux © Carsten Mell

- **Guidance Paper**: The Guidance Paper developed the Scoping Paper further and included the discussions during the Expert workshop. It elaborates the Guiding Principles for Integrated Approaches in Risk and Heritage Management in European Cities. In addition to an introduction to the topic for a broad target group and general principles of action for an integrated approach, the Guidance Paper also includes illustrative practical examples from the European area (based on the Best-Practice-Analysis).

  The Guidance Paper has been structured along the three core topics of **understanding / evaluating / managing risk** as they are inherent to every stage of RM and constitute the key challenges of risk governance, and therefore are at the core of needed guidance to Integrated RM.

In additional steps in the framework of a parallel research project by the BBSR, the findings are transferred and tested in the German context. Among other things, the following was stated here:

- **Interviews** with representatives of German municipalities from Lörrach, Cologne, Wismar, Stolberg, Bad Münstereifel, Aachen. Among other things, the following was stated here:

  ◦ Common databases and uniform, exchangeable structures are an important basis. It is equally crucial to evaluate the existing data and to interpret it in a targeted manner. At the same time, the implementation of such formats is at best in its infancy

  ◦ Reporting chains and communication among the actors, especially in the event of a crisis, must be significantly improved

- ◦ Ongoing (and long-lasting) awareness-raising of stakeholders is important - especially in "peacetime": Attention and tried and tested procedures otherwise quickly fall into oblivion again

- **Gaming Simulation:** A "gaming simulation" in April 2022 to test the findings and to develop a prototypical method for implementing an integrated approach to RM and cultural heritage in Bad Münstereifel, a city devastated by a major flood in 2021. Some of the key findings were:

  - ◦ Information, communication and mediation must be thought of and communicated in phases. It is important to clarify: Communicate what, when, to whom? Communication "at eye level", especially with owners of protected assets, is of great importance in order to initiate measures and steer them in the right direction

  - ◦ A clear definition and its consistent usage and application is crucial due to the complexity of the process. This definition should also be easily understandable and comprehensible for all stakeholders

  - ◦ The open and decisive question remains: Where will the capacities and resources come from? It is particularly difficult for smaller and financially weak municipalities to provide the necessary capacities. Current funding sources hardly offer any possibilities for support here

Location of the Gaming Simulation: Bad Münstereifel in western Germany with reconstruction work after the severe damage caused by the flood in July 2021.
© RHA

- **A handbook for local practitioners**. As a follow up of the interactive discussions and validation of the findings in the German planning context, a communicative
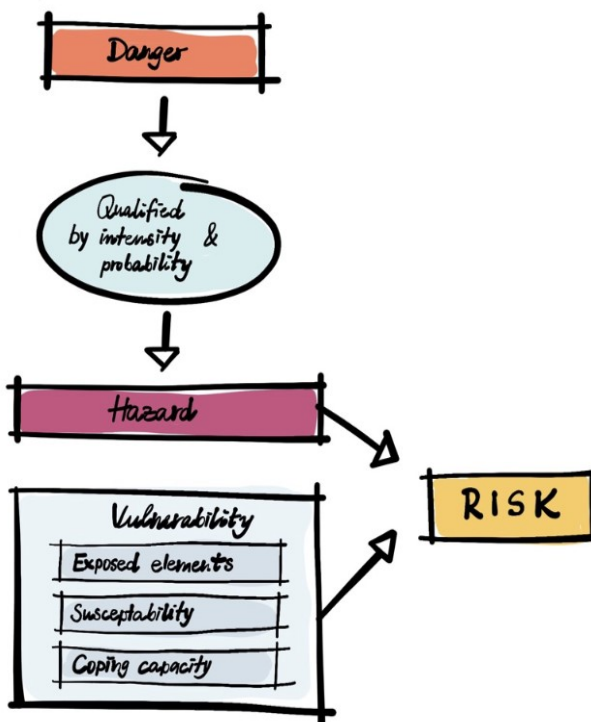
handbook containing key insights and recommendations for local stakeholders (publication in German) is expected to be published by fall 2022.

Key findings for the phases of understanding / evaluating / managing risk:

The major findings of the research project in accordance to the three core topics for guidance so far can be summarised as followed:

A) Understanding risk

The core topic **Understanding Risk** explains the methods and challenges of risk and measure *assessments.* They aim to *calculate* risk in base of hazards, exposure, and vulnerability, to find measures to *reduce* it. Furthermore, cultural heritage can also obtain tangible and intangible values which need to be defined and determined as a basis within the risk assessment process. Determining these values poses methodological challenges due to the uniqueness of heritage sites and the difficulty of recording intangible values in particular.

Risk assessments based on retrospective observation data become less and less reliable due to the uncertainty and dynamics regarding climate-change induced hazards. Here, scenario-based approaches are very useful. In the field of heritage conservation, methodological developments need advances with regard to the susceptibility assessments as well as the coping capacities of cultural heritage. A helpful guidance to Integrated RM needs to better explain the phase of *Risk* Assessment and therefore, approaches like the one presented on page 9 need to be developed further in order to better emphasize the phases of Risk Identification and Risk Reduction, before a natural event becomes a disaster). For instance, it is important to explain the different methods of assessment – their underlying principles as well as resulting merits and limits to analyze the hazard-dependent and heritage-specific susceptibilities, coping capacities and ultimately risks.

Current status: Cultural heritage is often not in the centre of attention in the RM community and the heritage community is not sufficiently familiar with the state-of-the-art in the assessment of risks and climate change impacts. The awareness is still quite weak and is only recently gaining attention.

Target status: Integrated RM is based on an all-hazard and a holistic heritage approach, which acknowledges the tight nexus of nature-culture, tangible-intangible as well as the object-site relation.

Main findings and results:

- **Integrated RM needs to consider the specificities of hazards when assessing risks.** Each threat requires specific methods to assess the related risk. This fact is reasoned by the heterogeneous impacts of the various hazards on cultural heritage. The assessment should take place in a probabilistic way, which means that the risk of a specific hazard will be quantified. These approaches can be roughly differentiated into the Quantitative Risk Assessment, the Event Tree Analysis, the Risk Matrix Approach and the Indicator-based Approach.
- **Integrated RM needs to take the specificities of vulnerabilities of cultural heritage into account when assessing risks.** The risk is not only dependent on the specificities of hazards but also of vulnerabilities of a heritage site. The vulnerability of Cultural Heritage can only be determined case-specifically, and it also differs between the different types of hazards a site is exposed to.
- **Integrated RM needs to acknowledge that there is no absolute certainty and safety when it comes to risks.** Due to the changing climate, retrospective observation data tends to become less and less reliable, and the prospective climate change scenarios show a very broad bandwidth of possible future conditions, highly dependent on the input data as well as the selection of the scenario corridor. Instead we should opt for a change in methodology towards a more scenario-based approach in order to identify at least a bandwidth of potential events. The selection of suitable measures for should then be based on these measures instead of preparing for a single expected case.
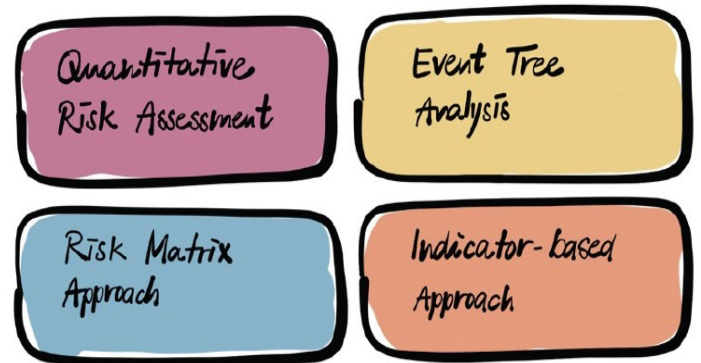
B) Evaluating risk

Integrated RM builds on the alternation of *factual and normative steps* – namely on *assessments* and *evaluations*. The core topic **Evaluating risk** addresses steps of *evaluation* in RM: These steps build on the factual data of Understanding Risk and define the next steps of the RM process, by assessing and judging the data to make informed and valid decisions. Two evaluation steps are particularly importance – the **Risk Evaluation**, judging the seriousness of risks and needs for risk reduction, and the **Measure Evaluation**, judging how acceptable measures are and thus informing how to select measures for implementation.

Current status: The normative dimension of integrated RM often remains overlooked: While the factual steps often are clearly structured, the normative discussion about protection goals and priorities remains on a more abstract level and is less addressed. Integrated protection targets and objectives for DRM as well as thresholds of acceptable risk are rarely defined.

Target status: RM is based on clearly defined and integrated objectives and protection targets as well as thresholds of acceptable risk and change. It makes the underlying value hierarchies and conflicts explicit

Main findings and results:

- **Integrated RM needs the debate and definition of clear objectives and targets, which are the baseline for judgement and decision-making.** It must be clarified and operationalized on a case-by-case basis which forms of cultural heritage are taken into account or ignored in local RM and how the worthiness of protection of cultural heritage and its tangible and intangible elements is to be evaluated in the risk assessment. In addition, there must be clarity about the overall goal of integrated RM, i.e., what state of the environment and society should be restored after the disturbance. This also includes the debate about which understanding of the term resilience should be used here (bouncing back vs. bouncing forward).
- **Integrated RM needs to debate and define the protection worthiness of goods as well as to design processes for weighing and prioritizing.** Conflicts in integrated RM relate primarily to issues of worthiness of protection. A first challenge in RM is to agree on a basis for making visible the different values attributed to a protected good. In addition, priority setting and trade-offs are particularly fraught with conflict because they imply the allocation of resources, which are usually limited. Systematic, transparent and consistent processes need to be developed for this purpose: This requires clear statements and explanations about which goods, objectives and/or measures are (not) considered, how they are weighed against each other, and how it is ensured that these rules are permanently observed.
- **Judgments and decision-making in Integrated RM need to follow an openly debated set of quality standards, wherein transparency, democratic legitimacy and accountability play a major role.** There is a requirement for basic quality standards on how to involve local stakeholders and how normative steps in RM could be guided. Therefore, the following standards are proposed:
    - Transparency and consistency of processes and decisions
    - Completeness and clarity of data as the substantive basis for decisions in processes
    - Openness and ongoing substantive as well as organizational coordination of assessment and decision-making processes
    - Democratic legitimacy and accountability for all decision-making

C) Managing risk

All documents underline the need for intersectional coordination and collaboration – in particular the involvement of local communities. However, there is neither information provided on who should be involved how at which phase of **Risk Assessment** and **Risk Management** for which purpose, nor are any key instruments of RM mentioned. Guidance on collaboration and coordination is missing. Since RM needs to be site-specific, useful guidance would have to offer more clarity on this key issue.

Current status: Often, guidance on collaboration and coordination within the RM governance processes is missing.

Target status: RM provides clarity about the relevant stakeholder groups and a mutually and clearly defined RM process

Main findings and results:

- **The Integrated Risk Management process needs to be inclusive: all actors and stakeholder groups should be involved in different and suitable forms of coordination and collaboration.** It is important to see where the involvement of local communities is most valuable, e.g., when it comes to the definition of objectives and values rather than during the more technical phase of assessment. However, even during the more technical aspects of the assessments potentially affected local communities and population groups should be consulted to ensure that potential risk management measures do not adversely affect these communities and especially vulnerable and disproportionately affected population groups. Also, the awareness for more 'informal' collaboration between the actors – besides the 'formalized' processes of coordination, often with help of one central or superior entity, which is not sufficient – should be increased.
- **There needs to be clarity and awareness about roles and responsibilities in Integrated RM.** Different stakeholders and actors have different skills and competences about which there must be awareness when it comes to assigning them responsibilities. As especially smaller municipalities often have only limited financial and personal resources, new approaches of governance are required in order to put Integrated RM into practice such as intermunicipal-cooperation or the creation of special organizations responsible for the protection of cultural heritage. Furthermore, the stakeholder groups have different roles and responsibilities in the RM process – that can also vary from place to place – and which need to be clarified.
- **Mechanisms of quality assurance in Integrated RM need to be set up.** Due to the evolution of the circumstances in which an Integrated RM process inscribes, iteration and continuous improvement are highly relevant. In order to ensure these, certain tools for quality assurance can be used as a support, i.e. the use of checklists or also the so-called 'scorecard method'. Furthermore, a monitoring instrument such as the strategic environmental assessment for plans and programmes should list and evaluate the cultural heritage as one of the protective goods.
- **Integrated RM measures need to be place-based and appropriate.** In order to set up an effective Integrated RM, it is necessary to define measures which are tailored to the location in terms of the characteristics of both components of risk, the hazard, the side is exposed to and its (hazard-specific) susceptibility. It is important to

discuss, assess, evaluate and finally choose appropriate measures, which can be clustered in the possible measure categories of keeping hazard-prone areas free of urban development and mitigating the susceptibility of land-uses, by adaptation of building structures or the construction of protection structures.

5) Observations/Remarks/Recommendations

Building upon the above-mentioned findings from the research project (chapter 4), the Action Group and the research team developed the following policy recommendations:

Recommendations for Better Knowledge

Establish a **common knowledge base** and **common understanding** in risk and heritage management
- Provide information - especially state-of-the-art information - in a language and format that is understandable by the target audience, which might not be experts in the specific field.
- Clarify and disseminate all major concepts, terms and definitions in risk and heritage management
- Cross-inform on state-of-the-art approaches – leading to more **scenario-based approaches** and specific determination of vulnerability instead of probabilistic data to identify a bandwidth of potential events.

Make relevant data for risk assessment **accessible and improve its scope**
- Create **cross-border and shared databases** with relevant information for risk and heritage management
- collect relevant data **jointly with various stakeholders**: universities, expert societies and organisations, local communities

Collect and promote **practice-oriented knowledge**
- Foster routines and new formats of **knowledge exchange** between different stakeholders (i.e. broader participative debates about the values and public interests in certain goods and thus in their protection worthiness, including the local community)
- Circulate and promote **local innovations** and **good practices** (cf. Chapter 4 and Annex)

Recommendations for Better Regulation

Foster **interagency cooperation** between different stakeholders in risk and cultural heritage management
- Clarify **roles and responsibilities** between the "core" team members in the local municipality with a key-coordinator, local partners and other (external) stakeholders
- **Clarify and synchronize legal requirements** in risk and heritage management in order to create an integrated approach (e.g. strengthen the role of cultural heritage in

the processes of weighting-up between different public interests and clarify the role of cultural heritage as a protective good)

- Provide **clear guidance** for all agencies involved, i.e. establishing transparent and consistent processes and decisions
- Promote the creation of **routines and infrastructure** for an interagency exchange and cooperation, establish standardized structures of integrated cooperation (e.g. checklists or scorecards)
- Create **trainings**, i.e. drills and simulations, to test the established routines before an emergency.
- **Include a specific chapter based on cultural heritage in RMCA (Risk Management Capability Assessment) Requirements for EU Members States reporting** – this could be an update to UPCM Decision No 2019/420/EU. This chapter should be drafted considering the perspective of three different worlds: First Responders, Cultural Heritage Owners and Scientific/Academic research initiatives, in order to further support EU member states in the inclusion of science in policy-making and provision evidence-based policies.

Support and promote **community engagement**

- Recognize **local communities as crucial partners and a resource** in the processes of the risk and heritage management
- **Give special consideration in community engagement to particularly vulnerable and needy groups** (older people, young people, people with previous illnesses, ...) and also those that are **traditionally underrepresented** (women, LGBTQI+, people with physical and/or mental disabilities, indigenous population groups, ...). It starts with the dedicated identification of these groups (i.e. making them visible as an important part of the community), goes on to finding participation methods that also work for these groups and ends with these groups being integrated into the planning and implementation of measures.
- Create (infra-)structures for **fostering and exchange** with community engagement: clarify roles and responsibilities; establish responsible coordinating bodies
- Foster **skill and capacity building**
- **Involve vulnerable / disproportionately affected population groups** that are traditionally not well represented and thus might be worse off after the implementation of a measure.

Recommendations for Better Funding

Support all mentioned **measures for better knowledge and better regulation:**
Establish a common knowledge base by

- improving the accessibility and scope of relevant databases
- collecting and promoting practice-oriented knowledge
- fostering interagency cooperation in risk and cultural heritage management
- supporting and promoting community engagement

Encourage **public-private partnerships** and **investments in preventive and mitigating measures** in risk and heritage management during the "peace time"

Make sure the **knowledge** about suitable and available funding measures **is accessible and understandable**, so the team that is responsible for RM has access / knowledge of this

information and/or access to an expert that can help with this (e.g. when do I use crowdfunding, when public-private-partnerships, etc.)

Support measures for **collecting and sustaining traditional knowledge** (as these skills usually are highly adapted to local hazards that occur with frequency)

Join efforts between cultural heritage and RM to increase funding opportunities: Integrating cultural heritage into RM ongoing projects and vice-versa, RM into ongoing cultural heritage projects, may might ease efforts to secure funding for new RM-CH projects. Since the EU is supporting several initiatives on the topic, this may become an incentive for countries to replicate.

Include **funding of research** for appropriate methods, models, tools, and measures, and make sure that there is **no funding gap at the end of research projects** to ensure the consistent transfer of research outputs into practice, especially in the EU context: establish a new EU funding mechanism – an "easy-to-apply-for follow-up" funding - that would allow (partial) consortiums to focus on the "last mile" of bringing research outputs into practice.

Note:

During the action's future work, some further points could be considered:

- *Possibly structure recommendations by target groups (EU/Member States/local level)*
- *Possibly add observations that relate to current geo-political state, climate etc.*
- *For better knowledge and regulation, perhaps also for better funding: Possibly add a strengthened coordination between the different levels of governments to avoid fragmentation of information and action*
- *Possibly add Massimo Migliorini's recommendations, in particular the need to increase the intersectoral cooperation and include first responders into the chain; possibly also to funding.*

Further remarks

There are other initiatives working in the same direction. To reference two very recent examples:
- The WHITE PAPER on "Cultural Heritage and Climate Change: New challenges and perspectives for research" developed jointly by JPI Cultural Heritage & JPI Climate
- The standard CWA 17727 on 'City Resilience Development – Framework and guidance for implementation with a specific focus on historic areas' that have been created in the context of ARCH and SHELTER project

Annex

- Barbara Minguez Garcia, then World Bank, Scoping fiche „Resilience of cultural and natural heritage", May 2020
- Documentation of Expert Workshop in Bordeaux: https://www.bbsr.bund.de/BBSR/DE/forschung/programme/exwost/Forschungsfelder/2021/baukulturelles-erbe/dl-workshop-doc-sep-2021.pdf?__blob=publicationFile&v=4
- Guidance Paper (to be published here in spring 2023): https://www.bbsr.bund.de/BBSR/EN/research/programs/ExWoSt/FieldsOfResearch/resilience-builtheritage/01-start.html
- Handbook *(spring/summer 2023, in German, to be published using the same link as the Guidance Paper mentioned above)*

Acknowledgements

We would like to thank all supporters of this action and to invite interested stakeholders to join the action – we plan to continue the action beyond the official timeframe of the Urban Agenda Partnership on Culture and Cultural Heritage. If you would like to learn more, or if you would like to contribute, please get in touch with Bastian Wahler-Zak (Bastian.Wahler@BBR.Bund.de) or Jan Schultheiß (jan.schultheiss@bmwsb.bund.de).