



Sustainable Historic Environments
hoListic reconstruction through
Technological Enhancement &
community-based Resilience

D.2.3. Anatomy of HA – Part B: Practical guide for Historic Areas

<i>Version number</i>	1.0
<i>Dissemination level</i>	PU
<i>Lead partner</i>	Politecnico di Torino (POLITO)
<i>Due date</i>	30.11.2020
<i>Type of deliverable</i>	report
<i>Status</i>	Delivered

Copyright © 2019 SHELTER Project



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821282

Published in the framework of:

SHELTER - Sustainable Historic Environments hoListic reconstruction through Technological Enhancement & community-based Resilience

Authors:

Rosa Tamborrino, POLITO

Mesut Dinler, POLITO

Contributors:

Louis Durrant, ULIEGE

Andrea Ugolini, UNIBO

Angela Santangelo, UNIBO

Eleonora Melandri, UNIBO

ISRBC

Reviewers:

TECNALIA

UNESCO

Revision and history chart:

VERSION	DATE	AUTHOR/EDITOR	COMMENT
0.1	15 November 2020	Rosa Tamborrino - POLITO Mesut Dinler - POLITO	First draft
0.2	24 November 2020	Louis Durrant, ULIEGE	Contributions for section 4.4
0.3	24 November 2020	Andrea Ugolini, Angela Santangelo, Eleonora Melandri, UNIBO	Contributions for section 4.5
0.4	27 November 2020	TECNALIA	Review
0.5	7 December 2020	UNESCO	Review
1.0	16 December 2020	Rosa Tamborrino - POLITO Mesut Dinler - POLITO	Final draft

Disclaimer:

"This document reflects only the author's views and neither Agency nor the Commission are responsible for any use that may be made of the information contained therein"

Table of content

1	Executive summary	6
2	Introduction	7
2.1	Aims and objectives.....	7
2.2	Relations to other activities in the project.....	8
2.3	Report structure.....	10
2.4	Contribution of partners	11
3	Overall approach and objectives	12
3.1	Approach to the practical framework for the Anatomy of HA and its methodology 12	
3.2	Scope and limitations.....	14
4	Tools for the Anatomy of HA and CNH assets characterisation in DRM perspective 16	
4.1	HA complexity in Risk-Informed Thinking	16
4.2	Macrocategories	17
4.3	The multilayered CNH asset characterisation: CNH ID_Risk.....	21
4.4	The interactive digital template for HA in DRM	22
4.5	HA assessment tools.....	25
5	Prioritisation of attributes	27
6	Tables	27
6.1	Building Macrocategory Table	27
6.2.	Urban Macrocategory Table.....	37
6.3.	Natural Macrocategory Table	47
6.4.	Compared attributes of Building, Urban, Natural Macrocategories.....	59
6.5	Table of Prioritization of Attributes according to the Shortlist of Indicators ...	80
7	The Interactive Digital Template	165
7.1	Sheet 1: Cover - Anatomy of HA in DRM perspective.....	165
7.2	Sheet 2: CNH asset ID_Risk.....	166
7.3	Sheet 3: Data and Information Resources	178
7.4	Sheet 4: Equipment, Tools and Procedures.....	181
7.5	Sheet 5: Human Resources.....	182
7.6	Sheet 6: Instructions for the template	183
8	CNH Glossary	184
9	References.....	196

List of tables

Table 1: Illustration of HA Anatomy by Natural/Urban/Building Macrocategories	22
Table 2: BUILDING Macrocategory Attributes.....	37
Table 3: URBAN Macrocategory Attributes	47
Table 4: NATURAL Macrocategory Attributes.....	59
Table 5: Finalisation of attributes of Building, Urban, Natural Macrocategories	79
Table 6: Prioritization of Attributes according to the Shortlist of Indicators for NATURAL Macrocategory	119
Table 7: Prioritization of Attributes according to the Shortlist of Indicators for URBAN Macrocategory	155
Table 8: Prioritization of Attributes according to the Shortlist of Indicators for BUILDING Macrocategory	164

List of figures

Figure 1: PERT chart of SHELTER.....	8
Figure 2: Illustration of HA Anatomy by Natural/Urban/Building Macrocategories.....	19
Figure 3: A screenshot of the Google spreadsheet with the 4 phases specified for CNH requirements.....	23

Glossary

Acronym	Full name
BBB	Building Back Better
CA	Consortium Agreement
CBD	Convention on Biological Diversity
CCA	Climate Change Adaptation
CH	Cultural Heritage
CNH	Cultural and Natural Heritage
CHM	Cultural Heritage Management
CoE	Council of Europe
D	Deliverable
DRR	Disaster Risk Reduction
DRM	Disaster Risk Management
DoA	Description of Action
EC	European Commission
GIS	<i>Geographic Information System</i>
GIZ	Gesellschaft für Internationale Zusammenarbeit
HA	Historic Area
HUL	Historic Urban Landscape
IBC	Istituto per i Beni artistici Culturali e naturali
ICCD	Cultural Heritage Central Institute [Istituto Centrale per il Catalogo e la Documentazione]
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
ICOMOS	International Council on Monuments and Sites
ICR	<i>Istituto Centrale del Restauro</i>
INSPIRE	Infrastructure for Spatial Information in the European Community
ISRBC	<i>International Sava River Basin Commission</i>
IuCN	International Union for Conservation of Nature
OL	Open Lab
MARIS	<i>MAppa del RISchio</i>
MiBACT	Ministry of Cultural Heritage, Culture and Tourism [Ministero per i Beni e le Attività Culturali e per il Turismo]
PDNA	Post Disaster Needs Assessment
SABAP	Local Institution for archaeology, Fine arts and landscape [Soprintendenza Archeologica Belle Arti e Paesaggio]
SDG	Sustainable Development G
SIGEC	<i>Sistema Informativo Generale del Catalogo</i>
UNITAR	United Nations Institute for Training and Research
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHC	World Heritage Convention (1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage)
WP	Work Package

1 Executive summary

This report represents the Part B of the multilayered methodology for the “Anatomy of Historic Areas: collective characterisation of CH assets” developed through the work done under Task 2.3.

The report Part B provides a practical guide for the categorisation of Cultural and Natural Heritage (CNH) assets in a Risk-Informed Thinking perspective. It builds upon the state of the art and existing ontologies and new theoretical developments presented in Part A of this report. It integrates the factors relevant for the assessment of resilience and vulnerabilities of the Historic Areas (HA) in a single tool with a specific focus on their intrinsic resilience characteristics and their capacity to contribute to a heritage-led resilience.

According to the SHELTER Project, the tool addresses HA at different spatial scales, including the territorial, urban and building scale by taking into account cultural, natural, and urban features. It has been designed bearing in mind that HAs are complex systems with tangible and intangible features which encompass both cultural and natural values referred to different kinds and scales of ecosystems. Considering the DRM as part of a broader vision for HA overall management, it addresses specific requirements of CNH assets to support decision-making and action in a DRM perspective.

The tool includes the definitions and identifications of the factors that can be defined as drivers of risks and resilience through a methodological approach for the collective characterisation that contributes to the objectives of SHELTER. More specifically, it contributes to the Data-Driven Platform (WP5) and the SHELTER Community-based approach (WP6) by developing a methodology to be implemented in Open Labs (OLs) (WP7).

Part B delivers the methodology as a practical tool for categorising CNH assets in a Disaster Risk Management (DRM) perspective. It provides a digital interactive template in an Excel digital format and targets the five SHELTER Open Labs. The template is customisable for collaborative characterisation according to diverse historic environments, scales, hazard exposure and specific objectives.

2 Introduction

2.1 Aims and objectives

This report represents the Part B of the multilayered methodology for the “Anatomy of Historic Areas: collective characterisation of CH assets” developed through the work done under Task 2.3.

Part B provides a practical guide for the categorisation of Cultural and Natural Heritage (CNH) assets in a Risk Informed Thinking perspective. It builds upon the state of the art of existing ontologies and new theoretical developments presented in the Part A of the report. It integrates into a tool the factors relevant for the assessment of resilience and vulnerabilities of the Historic Areas (HA) in a single tool with a specific focus on intrinsic resilience characteristics and their capacity to contribute to a heritage-led resilience.

The main aim of Part B is to provide the methodology as a practical tool for categorising CNH assets in a Disaster Risk Management (DRM) perspective as part of a broader vision for HA overall management. According to the SHELTER Project, the tool addresses HA at different spatial scales including territorial, urban and building scale, by considering HA as complex systems with tangible and intangible features which encompass both cultural and natural values to be referred to different kinds and scales of ecosystems.

For this purpose, it provides a digital interactive template in an Excel format and targets the five SHELTER Open Labs. The template is customisable for collaborative characterisation according to diverse historic environments, scales, hazard exposure and specific objectives

The tool includes the definitions and identifications of the factors that can be defined as drivers of risks and resilience through a methodological approach for the collective characterisation that contributes to the objectives of SHELTER. More specifically, it contributes to the Data-Driven Platform (WP5) and the SHELTER Community-based approach (WP6) by developing a methodology to be implemented in Open Labs (OLs) (WP7).

The methodology and the tool have been designed bearing in mind that HAs are complex systems linked to the Historical Urban Landscape (HUL) approach and taking into account the principles relevant to CHN management. Considering the DRM as part of a broader vision for HA overall management, the tool addresses specific requirements of CNH assets to support decision-making and action in a DRM perspective.

2.2 Relations to other activities in the project

Anatomy of Historic Areas: Collective characterisation of CNH assets has been conceived and has been discussed and agreed with SHELTER coordinator and all relevant partners as an integrated process with other project activities.

SHELTER project has been structured in 9 Work Packages (WP) to ensure cross-fertilization among the different steps and partners. The main objective of WP2 (Knowledge generation: Systemic HA resilience assessment and monitoring) is to produce a knowledge generation methodology to build multidimensional, cross-scale and systemic resilience assessment and monitoring workflows that will provide information in all the phases of Disaster Risk Management (DRM) (See Figure 1).

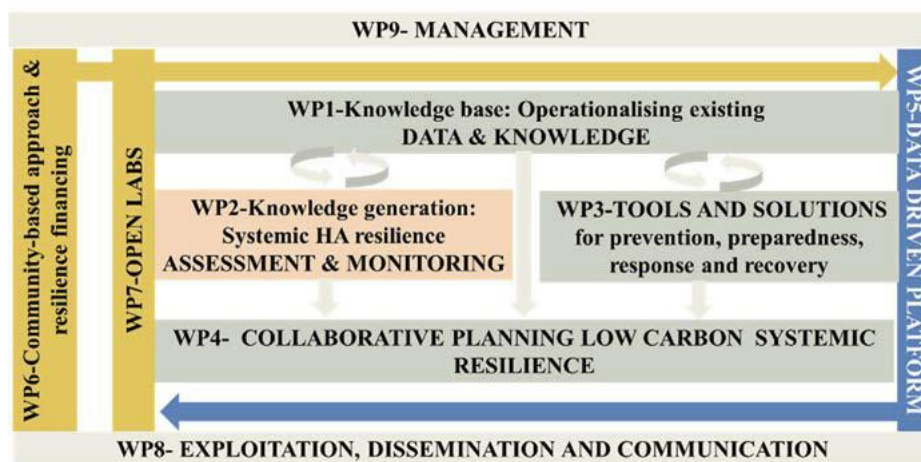


Figure 1: PERT chart of SHELTER

Within WP2, the work developed in Task 2.3 (Anatomy of Historic Areas: collective characterisation of CH assets) develops a multi-layered methodology to categorise CNH assets build upon existing domain ontologies according to factors relevant for the assessment of their resilience and vulnerability with attention to their intrinsic resilience characteristics and their capacity to contribute to a heritage-led resilience. The methodology is strictly linked with other WPs and Tasks and in particular:

The T2.3 has received relevant inputs from the **WP1 (SISTEMA)** and has provided outputs for the parallel knowledge developments and integrations. In particular:

- **T.1.2** Codification of existing knowledge (**UNIBO**) has provided the review of relevant regulatory frameworks for resilient CH protection against natural hazards (in international, national, and local levels). The process of the CH assets characterization started in the framework of Task 1.2 as an integrated cooperative process involving SISTEMA, UNIBO, UNESCO and POLITO and provided a mock-up. Task 1.2 also identified the past events knowledge baseline which is used for characterisation of CH assets. This characterization was integrated and developed into a Risk Informative Thinking in the activity of Task 2.3.
- The methodology presented for the CNH categorisation in the report supports the Multiscale Multisource data model developed in **T1.4 (EGIS)** by providing a

prioritization of categories and attributes to be included in a CityGML-produced model.

- The T2.3 has used the indicators identified by the **T 2.2 (TEC)** as one of the primary parameters for the prioritization of these attributes, in addition, to INSPIRE standards that are utilized in **T1.4 (EGIS)**.

The WP2 (TEC) has provided a theoretical and practical continuous confrontation about resilience characterisation and systemic approach. In particular:

- The **T2.1 (TEC)** has provided the shared context about the shared research questions and strategies.
- The **T2.2** Systemic resilience assessment and monitoring framework for HA (**TEC**) has provided the structure of indicators for the comparative framework with the CNH assets categorisation and the prioritisation of its characterisation.
- Advancements and knowledge exchanges have been developed between Task 2.3 and the **T2.4** on Characterisation of hazards, climate change events, impacts and projections/scenarios (**TEC**) for considering the impacts of hazards on CNH and multiscale approach. The output of the methodology developed in T2.3 will be used by both the Task 2.4 and the **Task 2.5** Specific hazard risk assessment (**EKO**) to be combined with other inputs in order to define a spatially explicit assessment methodology.
- The methodology will inform and support the development of a systemic multiscale resilience assessment (**T2.4 - TEC** and **T2.5 - EKO**), the identification of conservation-friendly adaptation solutions (**T3.4 - NBK**) tailored to the characteristics of specific CNH assets and the periodisation of Resilience ID (**T4.1 - TEC**).

Synergies with the **WP3** concern:

- Measures for rapid response and recovery that will be developed by **T3.3** Consolidation and structural stabilization in emergency phases (UPV) by using the CNH categorisation developed in the T2.3
- With the **T3.4**. Existing (local) solutions for adaptation and building back better (NBK) will be organised a workshop in the OLs on local and traditional knowledge. for a collective CNH characterisation.

The report provides relevant inputs for **WP4 (UNIBO)**. In particular:

- It provides a literature review and inputs in term of a theoretical and practical approach to **T.4.2 (UNIBO)** for the definition of protocols, plans and guidelines.
- Specific inputs are provided for the **T4.3 (UNIBO)** for developing a strategy for the identification of relevant information for the Building Back Better approach in the SENDAI framework according to CNH requirements.

- More inputs in term of DRM model addressed to CNH concerns the developments of the **T4.5 (UNIBO)** for the policies recommendations in order to integrate CNH requirements within existing policies.

WP5 will generate a Historic Areas Resilience Dashboard in **T5.3 (EGIS)** dashboard interface to help visualisation of the information collected in generated in different work packages including the information that will be produced through the methodology presented in this deliverable.

Interactions with **WP6** especially concerns:

- The T2.3 has used knowledge built on **T6.1** especially on the matter of the understanding of recent disasters in HA and a wider understanding of natural hazards.
- The adaptive governance schemes mapping (ULIEGE) is an ongoing development of the **T 6.3**. The T2.3 has addressed CNH governance characterisation as a relevant matter in shaping the CNH characterisation in DRM methodology.
- The methodology for Local Knowledge Generation developed in **T6.5 (POLITO)** has been used in the methodology to define the CNH asset in its context.

The suitability of the categorisation will be supported by and tested in the OLs in **WP7 (IHED)**. In particular, the Sava River Basin OL (**T7.6 – UNESCO**) provided a particular input for the development of the task. This input of the OL perspective as an intermediate validation of the methodology is presented in paragraph 3.6. Step toward a collective characterisation for CNH assets in Sava River OL: the OL perspective.

2.3 Report structure

This report is part B of a full report (Part A Full Report). It includes the main text body, annexes with tools and detailed structured information and the link to a digital interactive template.

The report is structured as follows:

- Chapter 1 provides the Executive Summary.
- Chapter 2 provides the introduction with aims and objectives.
- Chapter 3 provides the overall approach of the methodology.
- Chapter 4 represents the practical framework of the methodology with a pragmatic approach to the HA anatomy and CNH characterisation. It includes the tools for applying the methodology for CNH categorisation in a Risk-Informed Thinking perspective and a multi-scale, multi-hazard CNH characterisation, in DRM perspective. It also includes HA resilience assessment criteria.
- Chapter 5 provides prioritization and finalization of attributes.

- Chapter 6 provides the tables related to Macrocategories and prioritization of attributes.
- Chapter 7 represents the template.
- Chapter 8 provides the glossary.
- Chapter 9 presents the references.

2.4 Contribution of partners

POLITO: Coordination of the Task, development of the Deliverable. Presented and discussed the methodology in workshops.

ULIEGE: Responsible of WP6, and T6.3. Contributed with the section 3.4 Cultural Heritage assets governance characterisation

UNIBO: Responsible of T1.2. Contributed with the section 3.5 Good practices in national listing system: Italian Cultural Heritage catalogue and Carta del Rischio.

UNESCO: Technical Partner and co-coordinator of the Sava River Basin OL, contributor of T1.2, responsible for T6.1 Glocal User Requirements. Organised workshops for the methodology presentation and discussion. Reviewer.

TEC: Responsible of T2.2, participant in T1.4. Coordinator of the project. Reviewer.

SAVA: Contribution to the methodology.

3 Overall approach and objectives

3.1 Approach to the practical framework for the Anatomy of HA and its methodology

This practical guide to the methodology for the anatomy of HAs to characterise CNH assets in a Risk-Informed Thinking perspective was designed to serve as a practical approach to the management of HAs in a DRM perspective. It offers tools **to support pre-disaster and post-disaster** recovery and reconstruction decision-making processes, which involve a range of stakeholders.

HAs can be affected by one or more different natural hazards such as earthquakes, storms, floods, heatwaves, wildfires and subsidence. More specifically, the term hazard also refers to the risks created by humans and exacerbated by natural factors as defined by the European Commission in the document *Safeguarding Cultural Heritage from Natural and Man-Made Disasters: A Comparative Analysis of Risk Management in the EU* [1] and in *D. 6.1 Glocal User Requirements* [2]. All these hazards can cause severe damages to heritage with different kinds of threats and issues. The loss of cities' heritage values, among other problems, has clearly emerged from recent assessments on the matter of Heritage at Risk. These assessments especially point out the potential added value of urban heritage for resilience enhancement.

HAs are complex systems with tangible and intangible features which encompass both cultural and natural tangible and intangible values. They also include different spatial scales, including the territorial, urban and building scale, by taking into account cultural, natural and urban features. The approach to HAs needs to be linked to the Historical Urban Landscape (HUL) approach [3] as well as the principles relevant to CHN management.

The need for a methodology arises from a lack of specific knowledge and, more specifically, management tools on the matter of HA anatomy in the framework of disasters and risks. We consider that a detailed CNH assets characterisation would help in Disaster Risk Reduction (DRR) both in understanding the risk and in assessing the damages as well as providing the knowledge needed to face natural and human exacerbated disasters. A tool for the CNH categorisation in a Risk-Informed Thinking perspective would provide information that is needed for a systemic approach to DRM and the assessment of HAs. At the same time, it can help to develop new awareness on CNH vulnerability and increase its resilience against earthquakes, floods, wildfires, heatwaves, rainfalls and other natural disasters also related to climate change.

For this purpose, the report provides a methodology as a practical tool to support decision-making and action in a DRM perspective. The new methodology will allow characterising CNH them for DRM with a particular focus on the factors that are relevant for the assessment of resilience and vulnerabilities, considering their intrinsic resilience characteristics and their capacity to contribute to a heritage-led resilience.

HAs include complex sites at a different spatial scale including many CNH categories. In the SHELTER Project, HA refers to a range of CNH assets at different spatial scales. HAs include 1) Historical monumental buildings with their surroundings such as Santa Croce in Ravenna; 2) The historical Seferihisar district with the citadel; 3) The urban and industrial heritage of a historical city such as Dordrecht, 4) A natural area, the Baixa Limia-Serra Do Xurés Natural Park in Galicia which comprises the rural territories and their communities; 5) A transboundary composite area, such as the Sava River Basin, comprising both natural areas and towns.

The aim of SHELTER's cultural, natural and holistic approach was to go beyond developments by examining HAs for an integrated characterisation and management of the spatial scales. The methodology outlined provides a multi-layered approach to the anatomy and CNH categorisation of a wide range of sites, from natural areas to different inhabited human settlements, including both natural and cultural territories, historic towns, urban environments, open spaces and archaeological sites. HAs are conceived as cultural and natural areas to be analysed at different scales through a holistic approach. The methodology allows characterising CNH assets through the identification of the different drivers that, at different scales, need to be considered as relevant for a systemic multi-scale, multi-risk resilience assessment of CNH assets. It especially addresses SHELTER Project's HAs and is intended as a customisable tool for the collective characterisation in the OLs.

The report provides a practical framework for finalising this objective. It delivers tools to support decision-making and action in a DRM perspective. They consist of:

- (i) A digital interactive template in an Excel Google digital format for HA resilience assessment in DRM and CNH characterisation to be used in the different phases of hazard scenarios
- (ii) The identification of three macrocategories for the CNH categorisation: Building, Urban, Natural
- (iii) HA assessments tools and categories
- (iv) Three tables for the identification of CNH characterisation through the three Building, Urban, Natural macrocategories
- (v) A comparative table for Building/Urban/Natural characterisation
- (vi) Instructions for HA resilience assessment in DRM
- (vii) A CNH glossary

Moreover, the methodology presented in this report also constitutes an essential part of the Multi-scale Multi-source Data Model developed within the SHELTER Project (WP1). The Anatomy of Historic Areas and the macrocategories with their specifications (that are defined within a Risk-Informed Thinking perspective) are identified through attributes and their prioritisation with a close inspection of both international standards (i.e. INSPIRE knowledge base – INfrastructure for SPatial Information in Europe) and

the shortlist of indicators identified within the *D 2.2 Systemic resilience assessment and monitoring framework*. In order to exploit the multi-layered methodology for CNH categorisation, the open data model CityGML modules are also used to describe 3D features of buildings, vegetation and more urban components, along with other task leaders (mainly, D1.4 Multi-scale Multi-source Data Model) and participants to refine Macrocategories.

The final output builds on existing ontologies and definitions by taking into account international standards (see Glossary of World Heritage Terms [4], International Council on Monuments and Sites (ICOMOS) open archive [5] and UNESCO Thesaurus [6]), national registration or listing mechanisms and Disaster Risk Reduction (DRR), understanding the developments (such as Commission Nationale du Patrimoine et de l'Architecture (CNPA), Catalogo Generale per I Beni Culturali and Carta del Rischio) as well as the approach to different natures and scales of HA anatomy in consideration of the diverse scales of each SHELTER OL and the theoretical approach developed in Part A of this report.

The methodology includes in the notion of Risk-Informed Thinking for CNH assets some more relevant aspects developed in the framework of the SHELTER project, to be specified at the scale and nature of the specific requirements of CNH assets. It attempts to integrate different theoretical elements for building the SHELTER knowledge base. It benefits from the work done and the current work being done within other Tasks. More specifically, it refers to the work carried out in WP1, the Local knowledge (D 6.5 [7]), the current work being done within T6.3 with regard to the mapping of governance, as well as the Risk characterisation, Policies and other conceptualisations and tools such as the Data Model and HA Dashboard. As for Local knowledge, it provides a practical link for delivering the collective characterisation of CNH assets through Local and traditional knowledge gathering in the OLs.

With this methodology, the report delivers a structured, systemic and practical approach to:

- Categorising CNH assets in a Risk-Informed Thinking perspective
- Specifying and addressing the Disaster Risk Management (DRM) concept according to CNH assets.

3.2 Scope and limitations

The framework of the presented methodology poses some critical issues and limitations. Firstly, it should be mentioned that even though the deliverable highlights the tangible and intangible features of HAs, mainly due to the objectives and priorities of the SHELTER project, the categorization of CNH assets is especially detailed for tangible CNH assets. The methodology provides the link between tangible assets and intangible values and include them in the CNH characterization (e.g. cultural significance, local and traditional knowledge, cultural, historical, anthropological and social values). Secondly, the methodology in this deliverable frames CNH assets categorization into

Risk Informed Thinking perspective. However, DRM is only one part of the overall management of HAs and CNH assets. Thirdly, as the methodology considers the cultural significance and community perspective (collective characterization by OLs), interactions with other tasks will make this aspect stronger in the implementation process. Especially the implementation of the *D6.5 Local Knowledge Extraction* through workshops (scheduled for the next cycle of the project) and the finalisation of the *D6.3. Mapping of Adaptive Governance Schemes* (due in November, 2021) will reinforce the methodology in the matter of integrating local community values attributed to the CNH assets.

4 Tools for the Anatomy of HA and CNH assets characterisation in DRM perspective

4.1 HA complexity in Risk-Informed Thinking

HAs include complex sites to be linked to the HUL approach which identifies its components. Through the HUL approach, HAs include (i) Monumental heritage of exceptional cultural value; (ii) Non-exceptional heritage elements, yet present in a coherent way with appreciable abundance; (iii) New urban elements to be considered (2011 Recommendation on Historic Urban Landscape and clarifications in the 2019 Second Consultation on the Implementation of the Recommendation. See the glossary).

HAs include different spatial scales and many CNH categories with their related characterisations as well as those included in larger protected areas. The multi-scale SHELTER approach, in particular, identifies a very articulated scenario including buildings, districts, cities, regional and cross-region scales. The HA considered includes built and unbuilt areas in urban, natural and mixed sites.

In the complex and non-linear categorisation of HAs, heritage plays an important role. It contributes to characterising local communities and identities in these areas and the overall quality of life and environments. It is also an economic value and can contribute to economic development. In parallel with technological tools and data on hazards, an approach to improve knowledge of HAs with their CNH characterisation targeted to risks is highly needed. HAs present specifications and requirements to be linked to CNH assets standards and recommendations. With this aim, a DRM specification for the specific requirements of CNH assets is needed to take into account the **principles relevant to CHN management** such as “the least harm to heritage”, “reactive monitoring” and principles for the conservation and safeguarding of tangible and intangible heritage (see Part A 4.4).

The literature review and the theoretical analysis allow for the identification of the criteria to anatomise the wide range and scales of HAs by verifying CNH assets' categories according to the SHELTER Project. They also provide up-to-date identifications and integration of different categories of CNH assets as provided for by international, European, regional and national instruments. (They have been detailed in Part A chapter 3).

Furthermore, beyond the state of the art, the report provides a conceptualisation of the **CNH asset categorisation into Risk-Informed Thinking**. It shapes a **new systemic and dynamic approach** for CNH assets categorisation to face risks. Its main phases of PREVENTION, PREPAREDNESS, RESPONSE, RECOVERY shape HA dynamic scenarios for the DRM to face risks. Through this approach, a methodology is shaped for a step toward the systematisation of CNH categorisation for DRM. To do so, it takes into account the theoretical developments and the experiences provided in the framework of heritage and DRR. It collects scattered information and heterogeneous

references for better disaster preparedness throughout many parts of the world and for multiple risks (This analysis has been detailed in D 2.3 Part A, Chapter 4; in particular, see p. 62).

Based on this theoretical framework, the practical approach of this guide specifies:

- How to identify attributes for CNH asset characterisation to face risks across a range of different HA scales and types
- How to deal with CNH assessment in the different phases of DRM.

The output is a common framework to survey and record the identification of specific attributes. It articulates not only the range of threats and the range of CNH categories scales but also the approach to the CNH assessment and DRM. The attribute specification of CNH assets provides a new identification of CNH assets to face Risks, that can be defined as **CNH ID for Risk-Informed Thinking**.

In this way, the categorisation also links the CNH assets categories to a spatial dimension for providing meaningful information and management tools.

4.2 Macrocategories

Macrocategories include the CNH categorisation according to the literature review and theoretical analysis developed in Part A. They have been identified to manage the HA complexity together with the range of linkable heritage categories. The major macrocategory will make the CNH characterisation possible and will address related analysis according to the specificities of each HA and its scale. According to SHELTER Project HAs, the final macrocategories have been identified as **Building, Urban, Natural** (Figure 2).

It should be noted that the macrocategory approach has also been intended as a useful expedient for the Data Model design (D1.4) and visual representation of the Historic Areas Resilience Dashboard by combining the CNH assets categorisation with other parallel patterns of SHELTER Project knowledge building. The identified categories have been also organised by the structure of the georeferenced database (which will be produced through CityGML) in order to provide a list of attributes that can reflect the approach and methodology presented in this report. In the next steps, Historic Areas Resilience Dashboard will provide a visualisation.

The Macrocategories tool outlines:

- **the highest level of anatomy** by identifying the characterisation of human settlements and natural areas;
- **a second-level anatomy** by detailing the CNH assets according to attributes that can express more in detail risk exposure and assets' characters that can be linked to resilience indicators (Deliverable 2.2).

Using the Macrocategories, complex sites at different scales can be linked to the attributes, characterising the CNH assets by risk, as well as other linked assets for a combined yet articulated understanding of HA. The CNH asset ID_Risk methodology can be shaped. Figure 1 provides a **visual representation of heritage holistic approach by macrocategories**.

HISTORIC AREAS ANATOMY BY NATURAL / URBAN / BUILDING MACROCATEGORIES

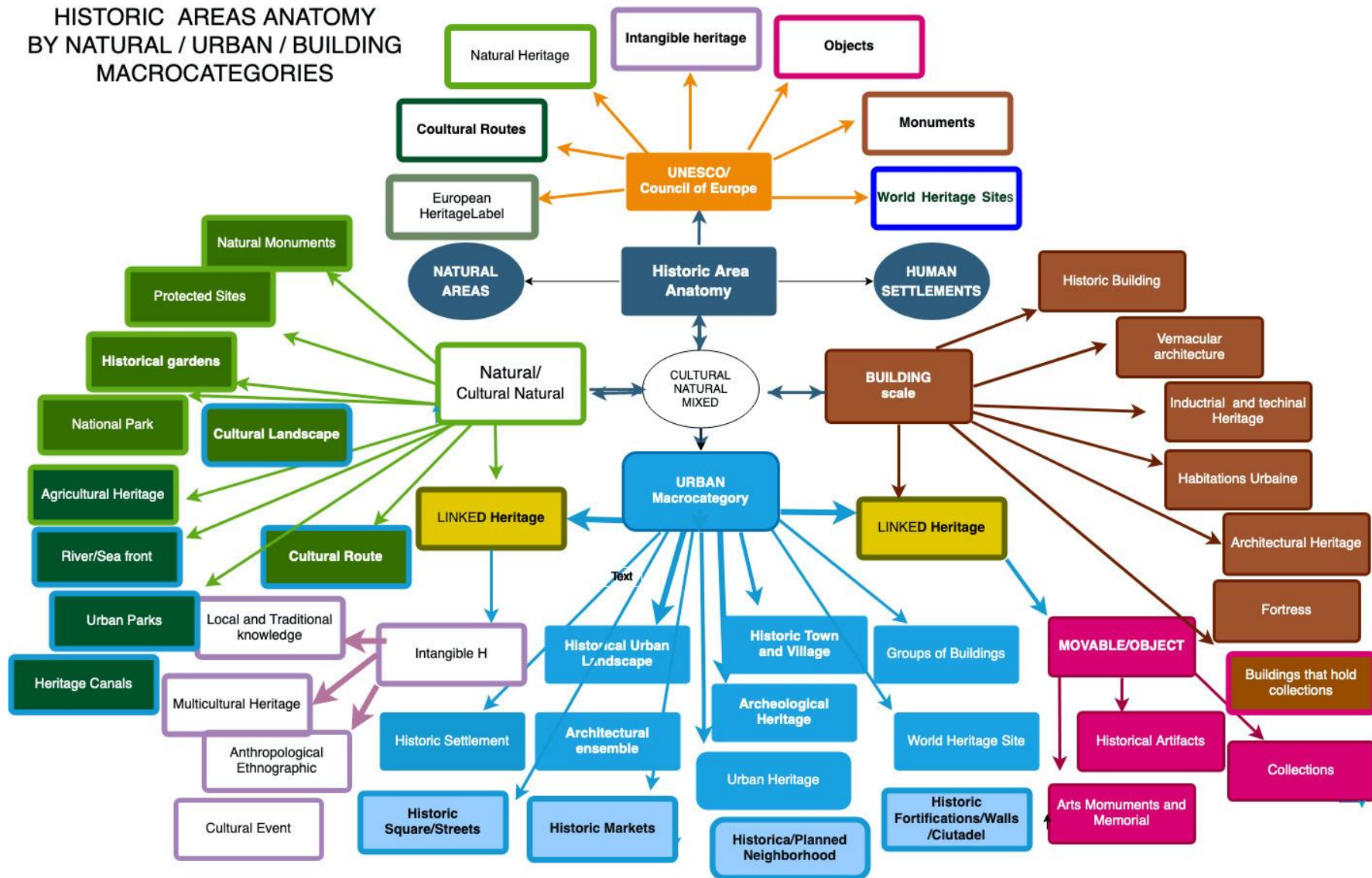


Figure 2: Illustration of HA Anatomy by Natural/Urban/Building Macrocategories.

The **Building macrocategory** refers to any kind of monuments and historical buildings both urban and rural, including complex buildings such as monasteries, industrial heritage, historical barracks and other buildings of cultural significance that are important for local cultural identities and collective memories, as well as characterising architectural elements such as infrastructure and institutional buildings. It also includes the movable CH assets that may be stored in the building such as museums objects. Moreover, it includes related intangible heritage. The final categorisation is presented in the table “Building Macrocategory” in Chapter 6.

The **Urban macrocategory** refers to a human settlement of different sizes (in particular, a city). It refers both to historical cities as a whole and urban areas. The Macrocategory assumes that safeguarding and recovery of CNH in historic cities go beyond the collection of individual monuments and objects and related actions. It details the identification of CNH assets by considering the complex relationship among heritage assets in urban areas, urban development and urban heritage resilience. It includes heritage sites and other HA places of cultural significance that are important for local cultural identities and the collective memory, as well as urban and characterising architectural elements such as urban form, urban fabric and public space. The final categorisation is presented in the table “Urban Macrocategory” in Chapter 6.

Also this macrocategory is based on literature review, policies of urban HAs at risk and post-disaster assessment (detailed analysis in Part A 4.3). More particularly, to avoid discontinuous terminology, it benefits from recent UNESCO surveys about 40 cities with a large variety of historic urban areas. [8]

The **Natural Macrocategory** refers to natural heritage assets of different sizes and types. It also includes CNH categories that comprise human settlements, building sites and shelters where the natural landscape component is a relevant priority for the characterisation of the site (e.g. cultural landscapes, cultural routes). It also includes natural areas and trees in urban areas. The categorisation especially targets risks and resilience characterisation of related inhabited and urbanised areas. Links to other Macrocategories provide contextualised information. The final categorisation is presented in the table “Natural Macrocategory” in Chapter 6.

Categories identified among the NATURAL Macrocategory take into account the IUCN classification of natural area categories for protected areas. The macrocategory aims at specifying the integration of natural elements with human interactions that have produced HA characterisations such as the “cultural landscape” category. Furthermore, it includes the category of “cultural routes” identified in the programme established by CoE as well as other categories that have been provided by several national contributions. Specific analysis is provided in Part A 4.3.

4.3 The multilayered CNH asset characterisation: CNH ID_Risk

The CNH ID_Risk characterisation defines the analytical knowledge for the anatomy of HAs in a DRM perspective. This perspective integrates the relationships between risks and cultures, traditions, heritage and resilience in HAs.

It acknowledges that heritage - both tangible and intangible - is not just a passive resource that can be affected and damaged by disasters. On the contrary, **CNH assets have a proactive role in resilience**. CNH assets are defined by their own tangible and intangible layers, but they are also characterised by contextual factors such as the site, environment, historical setting, anthropic social and economic attributes, cultural, anthropologic and other intangible values, local and traditional knowledge, the system of governance and related policies. Specific contexts amplify the understanding of HA and extend CNH asset knowledge. To assess HAs in DRM, CNH asset characterisation should not be limited to risks, exposures and vulnerabilities but it should also take into account that any **CNH asset needs to be contextualised**.

The outlined methodology integrates and combines parallel developments in the SHELTER Project (D1.2, D1.4, D2.2). Furthermore, it identifies key contexts for the categorisation of CNH assets according to the scale, type, main hazards, exposures, cultural and natural values. It makes it possible to consider the location, built assets, economy, population, governance (as suggested by the UNESCO 2016 *Culture Urban Future: Global Report*), among other factors.

The identification of the key contexts combined with the macrocategories, in fact, allows for the definition of a highly-characterised categorisation. The Building, Urban and Natural macrocategory features provide the identification of the specific attributes. Through the macrocategories, the HA anatomy makes it possible to identify the related CNH settings and contexts as well as integrating their characterisation to face risks. In this way, the CNH asset ID_Risk methodology delivers a very detailed identification of the CNH categories including all the HA elements, components and specificities with the attributes for their characterisation. It takes into account the wide range of HAs and the CNH asset categories, in addition to including the range of their contexts for the effective information needed.

The CNH asset ID_Risk schema with metadata is provided in Table 1.

Defining CNH asset ID and its significance
<ul style="list-style-type: none"> • Denomination • Location • GIS system • Cadastral Data • Land Cover • Pre/Post Disaster Assessment according the Indicators of State of Conservation (ISC) • Knowledge assessment • Photograph • Site Plan/map • HA type • HA characterization • HA scale

<ul style="list-style-type: none"> • Macrocategory • CNH type • Category List (Select from the table) According to Glossary • Other Cultural Natural Pro pert type for BUILDING Macrocategory • Other Cultural Natural Pro pert type for URBAN Macrocategory • Other Cultural Natural Pro pert type for NATURAL Macrocategory • Classification / Registration Status • Simple/Complex CNH asset • Detailed list of CNH components in the case of composite CNH classification • Movable Heritage in CNH Asset List of components • CNH hosting event, festival, fair • Site hosting events, festivals, fairs, other • Overall description of the HA in the current situation with its relevant values and physical components listed and defined that will allow directly linking to specifi analysis and detailed information in the Clusters of Resources • Overall description of the CNH asset in the current situation with its relevant values and physical components listed and defined that will allow directly linking to specifi analysis and detailed information in the Clusters of Resources • Materials and Techniques for Built Environment and Archeological sites -BUILDING Macrocategory • Restoration and reinforcement for Built Environment and Archeological sites - BUILDING Macrocategory • Natural/territorial ways and techniques of cultivation for NATURAL Macrocategory • Design and management works for NATURAL Macrocategory • Techniques of reinforcements and ways of traditional maintenance for NATURAL Macrocategory • Public facilities and services for URBAN Macrocategory • Urban fabric Type for URBAN Macrocategory • Historical Information • Functions and uses • Quantitative Data for BUILDING Macrocategory • Quantitative Data for URBAN Macrocategory • Quantitative Data for NATURAL Macrocategory • Links with Other CNH assets • Inspection Information
Defining its Risks
<ul style="list-style-type: none"> • Hazard type according to SHELTER indicators • Exposure Type • Vulnerability • Resilience indicators according to SHELTER indicators • Monitoring Time • Disaster Past events
Defining the CNH asset in its context
<ul style="list-style-type: none"> • Environmental Context and risk Exposure. • Geographical Context and Physical Asset • Local and Traditional Knowledge • Cultural, Historical, Anthropological and Social Context /Intangible Heritage • Governance • Anthropic and Economic Context • Policies and Planning context • Existing Inventories • Links to other CNH catalogues and inventories and interoperability

Table 1: Illustration of HA Anatomy by Natural/Urban/Building Macrocategories

4.4 The interactive digital template for HA in DRM

The methodology achieves its full completion by integrating the CNH ID_Risk characterisation with the iterative DRM phases. A digital interactive template is provided as a practical approach for the multi-layered methodology for multi-hazard, multi-scale CNH asset characterisation targeted to the DRM framework (Figure 2). The template interactively provides several menus for the compilation of information and allows users

to add more information when necessary. It is designed as a flexible and **customisable tool to adapt to** different spatial scales, CNH asset categories and HA types as well as different local characterisations. It provides a practical tool for CNH assets' **collective characterisation** in the SHELTER OLs.

The interactive template is delivered **as a Google spreadsheet available at the link** <https://docs.google.com/spreadsheets/d/1Dp1jAOHrmkXUIIVXM-9FnP49w1wLbdHzcjVEm-Fh1eU/edit#gid=1420174272> (see also the Excel spreadsheet in Annex 6 in Part A).

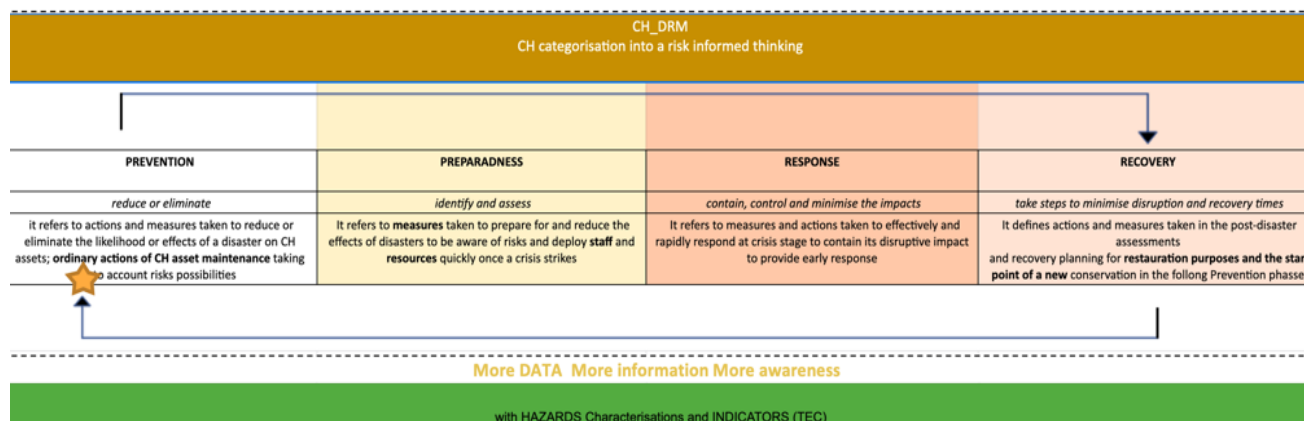


Figure 3: A screenshot of the Google spreadsheet with the 4 phases specified for CNH requirements. The arrows emphasise the dynamic cycle. The star shows the new starting point with increased knowledge. The complete form is available in Annex 6 in the Part A and at the link <https://docs.google.com/spreadsheets/d/1Dp1jAOHrmkXUIIVXM-9FnP49w1wLbdHzcjVEm-Fh1eU/edit#gid=1420174272>

The interactive template is designed to integrate and finalise extensive and heterogeneous information and to easily collect and organise the available knowledge (scientific, local or traditional, oral) in a shared framework. It was also conceived for HA resilience assessments. In the case of damages, the attributes would allow accurate assessments to be carried out on the severity of the quantitative and qualitative loss. For this purpose, they include different types of data including cultural values, economic costs, community benefits and resilience. Moreover, the structure of the tool is also intended for facilitating scientifically-based and culturally-sensitive conservation and restoration. Attributes ask for avoiding further damage to heritage in critical phases by considering to remove the debris, shelter and basic services in emergency or post-emergency steps. The RESOURCES sheet refers to Analytical Information and Documentation available to be collected or linked to CNH assets.

The tool provides a dynamic and systemic approach for CNH categorisation and characterisation by taking into account four DRM phases. According to the SHELTER Project approach, the identified phases are Prevention, Preparedness, Response, Recovery. The form identifies the systemic and dynamic approach to CNH assets in these four phases through **4 clusters of information** that make it possible to assume and finalise diversities and specificities of HAs for implementing the model:

- CNH asset ID_Risk

- Data and Information Resources
- Equipment, Tools and Procedures
- Human Resources

Each cluster includes strategic actions that should be tested and implemented in the Prevention, Preparedness, Response, Recovery phases. A digital GIS-based approach could be eventually integrated in order to link data and create a continuous dynamic update while rationalising the analysis.

The clusters of information are intended for:

- (i) *Identifying* and characterising CNH assets in the PREVENTION phase
- (ii) *Addressing* the risk this knowledge in the PREPAREDNESS phase
- (iii) *Responding* with emergency measures in the RESPONSE phase
- (iv) *Re-establishing* the CNH assets with the lowest damages in the RECOVERY phase

The digital template includes:

- Sheet 1: Cover
- Sheet 2: CNH asset ID_Risk
- Sheet 3: data and information resources
- Sheet 4: equipment, tools and procedures
- Sheet 5: human resources
- Sheet 6: instructions for the template
- Sheet 7: a glossary (also presented in Chapter 7) for CNH asset categories, definitions, relevant terminology and the damage assessment categorisation.

Sheet 2 refers to the CNH categorisation and its characterisation presented above (see chapter 4.3)

The “data and information resources” sheet refers to analytical information and documentation available to be collected or linked to CNH assets

The “equipment, tools and procedures” sheet refers to collecting specific information for DRR

The “human resources” sheet refers to community engagement and the network of stakeholders.

Within the template, the macrocategories are identified by colours. The colours are:

- brown for the BUILDING macrocategory
- light blue for the URBAN macrocategory
- green for the NATURAL macrocategory

4.5 HA assessment tools

The template provides a tool for including and organising a system of useful information **for enhancing and assessing** HA resilience. The methodology is intended **to be used and applied at different phases of DRM to support decision-making**. With this aim, the template includes assessment procedures and criteria. It can be **customised according to different scenarios** for specific purposes and different users (e.g. for heritage practitioners, volunteers, NGOs). For this purpose, it combines the information from the Resilience ID indicators (D2.2), Data Lake Model (D1.4) and the analysis provided in the visual representation of the Historic Areas Resilience Dashboard (D5.3).

It is intended to guide a continuous monitoring process. It may be helpful during pre-disaster and post-disaster recovery and reconstruction decision-making processes, which involve a range of stakeholders who may also need their capacities improved in the areas of CNH categorisation. We assume that in the case of damages, a HA assessment should consider the severity of the quantitative and qualitative loss. For this purpose, the different attributes encompass multiple evaluation approaches, including cultural significance, economic costs, community benefits and resilience.

Based on the state of the art of assessment criteria (as described in Part A 5.1), the proposed methodology provides attributes and procedures for the following assessment of HA in a DRM perspective.

A) Knowledge assessment in a Pre-Disaster phase and in Post-Disaster phases.

The tool offers a self-assessment procedure by referring to Key knowledge gaps and Key knowledge levels.

Key knowledge gaps are identified by (see Eurocode 8 for earthquake resistance [9]):

- (i) Lack of consistent and comparable data
- (ii) Little scientific understanding and measurement of significant attributes
- (iii) Little knowledge of critical vulnerability factors

Key knowledge levels are:

- KL1: Limited knowledge
- KL2: Normal knowledge
- KL3: Full knowledge

The assessment approach can be customised and managed at a local level for a collective characterisation of the level of knowledge for DRR of CNH assets:

B) Prevention/Preparedness preliminary assessment

In the Prevention phase of DRM, the template provides a preliminary survey to highlight CNH assets' exposures and vulnerabilities. This methodology highlights some important weak points. Based on a preliminary assessment, improvements in the Preparedness phase should be made by identifying data and information, enhancing the state of conservation and providing on-site preventive measures.

C) Response/Recovery loss assessment

This methodology offers a knowledge assessment of qualitative and quantitative information about the damages. The template also suggests criteria for interactively collecting the related documentation. As for damage assessment, it provides the categorisations listed below.

The categories identified for a preliminary CNH loss assessment are (UNITAR [10] and analysis in Part A 5.1):

Critical loss: Site destroyed. All or most of the visible key elements of the assessed site have collapsed (80–100 per cent of the structure destroyed). All of the main historically-valuable elements inside the cultural heritage site have been destroyed.

Severe loss: Site severely damaged. A significant part of the visible key elements of the site has collapsed, is partially damaged (40–80 per cent of the structure damaged) or significant military or civilian activity has contributed to extensive damage to the site. Many of the main historically-valuable elements of the cultural heritage site are severely damaged causing severe loss

Moderate loss: Site moderately damaged. Limited damage observed on the key elements of the site (5–40 per cent of the structure damaged); military or civilian activity may have contributed to the damage. Some of the main historically-valuable structures inside the cultural heritage site are moderately damaged causing moderate loss

Minimal loss: Site possibly damaged. Assessed site structures do not appear to be damaged, but debris is visible around the key site structures. None of the main historically valuable elements of the cultural heritage site is damaged.

The categories were identified for a further post-disaster loss assessment for the Building macrocategory (see Carta del Rischio [11] and analysis in Part A, 3.5 and 5.1). It offers an assessment of Building tangible heritage loss through criteria based on the entity of the damage (codified scale from 1 to 3), the extension of the damage (%), the urgency of intervention (codified scale from 1 to 5) by considering the following general damage typologies:

- Material disaggregation

- Humidity
- Biological Attacks
- Surface Layers Alteration
- Missing Parts

5 Prioritisation of attributes

As explained in Paragraph 4, D2.3 provides a system of Macrocategories and attributes to be utilised in the *Multiscale multisource data model* (D1.4) in which CH macrocategories are georeferenced with their defined attributes. For the prioritisation of the defined attributes, the indicators defined in D 2.2 [12] are used. Each attribute that corresponded to an indicator was prioritised for creating a GIS database within the framework of the Data Model. The table presenting this correspondence is provided in section 6.5. For the same purpose, in addition to the indicators, INSPIRE data specifications are also considered to prioritise the attributes. The finalisation of the prioritisation according to INSPIRE standards is presented in D1.4.

6 Tables

6.1 Building Macrocategory Table

BUILDING MACROCATEGORY ATTRIBUTES

DEFINING THE CNH ASSET AND ITS SIGNIFICANCE	
Denomination	Current Formal Name
	Local Name
	Name in other languages
Location	Country
	City
	Location
	Geographic Coordinates (Latitude / Longitude in WGS84 (Pseudo / Mercator) Spatial reference system)
	Height above sea level (m)
	GIS System
	Cadastral Data
	Photograph
Conservation Status and pre/post disaster assessment according to the Indicators of State of Conservation ISC (Glossary)	Site plan /map (Drawing or attachment)
	Value categories for Integrity
	Value categories and Conservation Status for Authenticity
	Value categories and Conservation Status for Cultural Significance
Knowledge Assessment	Other eventual value categories
	Knowledge gap -Lack of consistent and comparable data (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)
	Knowledge gap -Few evaluations of critical vulnerability factors (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)

	Final knowledge assessment evaluation (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)
HA Type	Macro/Single Site
	Mixed site (Yes/No)
	Building in Human Settlement. Define:
	Building in Natural Site. Define:
HA Characterization	Single Building / Complex building
SHELTER Scale	Building
	District
	City
	Region
	Cross-regional
Macrocategory	BUILDING
	Urban
	Natural/Territorial
CNH Type	Tangible Heritage (Immovable),
	Tangible Heritage (Movable/Object)
	Intangible Heritage
CNH Category (Glossary)	Archaeological Heritage Architectural Heritage Habitation urbaine Historic Building Industrial and technical heritage Monuments Vernacular architecture World Heritage
Other CNH asset Type	Aquarium building Architectonic painting Architectonic inscription Architectonic sculpture Archive (including sound, photographic and cinematographic archive) Building holding collection Cinema Collection Building relevant to local history and tradition (civic/ educational/health/leisure/ military/religious/etc.) Chapel Historic factory Historic farm Historic/designed holiday resort Historic rural construction Library Market building Memorial and traditional local monument Monastery Monumental sculpture Museum Refuges cultural property Rural architecture Sanctuary Theater Thermal building Town hall Traditional local building or construction Underground architecture (bunker /cistern etc.)

	Other building of cultural natural significance. Define
Classification / registration status	Listed in the UNESCO WHS (with Ref no and Link)
	Listed in IUCN Protected site (with Ref no and Link)
	Listed European Heritage site (with Ref no and Link)
	Listed National Heritage Site (with Ref no and Link)
	Local Heritage Site (with Ref no and Link)
	Listed in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity (with Ref no and Link)
	Other classification/registration. Detail:
Simple / Complex CNH asset	Simple site: Specify according to the UNESCO Thesaurus for descriptive terms [e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches]
	Complex Site: Specify in the cell below, indicate detailed list of CNH components (see the cell below)
Movable Heritage in the CNH asset	Specify List of Movable Heritage
Detailed list of CNH components in the case of composite CNH classification	List Components and related Types Specify according to the UNESCO Thesaurus for descriptive terms (e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches)
CNH asset hosting events, festivals, fairs, other	Specify Periodic Events hosted, Period of the year, number of visitors
Overall identification and assessment of the HA in the current situation with its relevant values and physical components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)	Overall identification and assessment of the CNH asset in the current situation with its relevant values and physical components listed and defined that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)
Overall identification and assessment of the CNH asset in the current situation with its relevant values and physical components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)	min 300 - max 500 words (fill in according to the indications)
BUILT Environment and archaeological sites Material and Techniques	300 words max Overall description of the historical Materials and Techniques of CNH asset in relation to its components. Link to Related Resources Main material of the structure Secondary material of the structure (if any) Primary structure construction technique (rubble masonry, sack masonry, load-bearing masonry, adobe, adobe and timber, reinforced concrete pillars, etc..) Horizontal structure material Roof material Canopy/shelter for archaeological sites

Built environment and archaeological site Restoration reinforcements	Latest Intervention Date and Type Link to Related Resources Reinforced-concrete slab: Roof (yes/no) Vault (yes/no) Horizontal structures (yes/no) Regeneration of walls with concrete injections (yes/no) Tie bars (yes/no) Concrete underpinning or plinth (yes/no) Prestressed cables - walls or other elements (yes/no) Micropile underpinning bracket (yes/no) Roof/floor edge beam (yes/no)
	Date / Century
	Historical period
	Overall description of Territorial transformations
	Timeline
	Thematic maps
	Architects/Engineer/Landscapers/Archaeologist/Artist
	Patronage
	Archaeological excavations (repeatable field)
	CNH Historical Name
Historical Information	Name of historical territorial area
	Historical functions
	Current function
	Number of CNH asset staff
	Number of CNH asset inhabitants
	Open to public (Y/N)
	Presence of inhabitants
	Touristic use and system of admittance and management
	Used by Local citizen
Function and uses	Land cover
	Dimensions
	Volume
	Number of floors
Quantitative Data	Moveable
	Intangible
	Other tangible
Links with other CNH assets	Inspector(s)' institution/affiliation
	Inspection Date:
	Type of inspection <ul style="list-style-type: none"> Assessment Emergency Rainy season inspection Regular Other. Define:
	Inspection management <ul style="list-style-type: none"> Private Public Other. Define:
	Responsibles. Define:
	Accessibility on inspection: <ul style="list-style-type: none"> Day open access Closed Guarded Other. Define:
Inspection Information	

	Weather condition on inspection <ul style="list-style-type: none"> • Raining • No raining
	Other. Define:

DEFINING ITS RISKS	
Hazard Type	Earthquake Flood Heatwave Subsidence Storm Wildfire <ul style="list-style-type: none"> • Directly natural • Exacerbated by natural factors • Generated by human Other. Define
Exposure Type	Hazard characterization Exposure to hazard Sensitivity (component of vulnerability) Capacity of response (component of vulnerability)
Vulnerability	Historic building environment resilience Cultural resilience Social resilience Governance and institutional resilience <ul style="list-style-type: none"> • Economic resilience Environmental resilience
RESILIENCE INDICATORS according to SHELTER	
Monitoring Time Existing Monitoring Scheme	Existing Monitoring Scheme
Disaster Past Events	Wildfires scale Frequency and intensity of wildfires <ul style="list-style-type: none"> • Earthquake • Flood • Heatwave • Subsidence • Storm • Wildfire scale • Wind storm • Other. Define: Period (spring fires cause different and more severe changes in many biological processes) Hectares burned Loss of human life Storms/storm wind

DEFINING ITS CONTEXTS	
Environmental context	
Overall description of prevalent situation according to Geological, hydrological, and meteorological information on the nature of the climate, soil, fault lines (if any), water table, surface water such as a river, etc.	

Ecosystem Type	Terrestrial - Urban, Terrestrial - Cropland, Terrestrial - Grassland, Terrestrial - Woodland and forest Terrestrial - Heathland and shrub Terrestrial - Sparsely vegetated land, Terrestrial – Wetlands, Fresh water - Rivers and lakes, Marine - Marine inlets and transitional waters Marine - Coastal Marine - Shelf Marine - Open ocean
Meteorological and climatological features	
Ecosystem	<ul style="list-style-type: none"> Natural Semi-natural
Ecosystem Services. Define:	
Drought and high temperatures events	
Storm wind	
Dry days number for year	
Rain days number for year	
Water quality: surface and groundwater	
Air quality	
Noise	
Soil degradation mechanism	
Air degradation mechanism	
Water degradation mechanism	
Inappropriate development	
Geographical Context and Physical Asset	
Overall description of CNH asset surroundings including Immediate neighbourhood, village, district, natural asset	
Physical Infrastructures above ground and networks in the surroundings (e.g. dam, tunnels) (Repeatable field):	Energy infrastructures (generation, transformation)
	Energy networks (distribution)
	Transport network (roads, paths, waterways)
	Water management and sanitation (drainage, sewage system)
Physical Infrastructures below ground and networks in the surroundings (e.g. dam, tunnels) (Repeatable field):	Energy infrastructures (generation, transformation)
	Energy networks (distribution)
	Transport network (roads, paths, waterways)
	Water management and sanitation (drainage, sewage system)
Energy infrastructures with potential risk (energy centrals, nuclear centrals, trafos, etc.)	
Energy-efficient facilities	
Water use efficiency at its facilities	
Topographical characterisation	Coastal
	Inland
	Island
	Marshland
	Mountain

	Plateau
	Riverside
Site:	Mountains overhead
	Mountain under-head
	Waterfront
	Other, Define:
Distance from water basin Distance from over heading land	
Access to CNH asset	
Access to the surroundings - This should be linked to communication/transport network	
Disabled people accessibility (wheelchair)	
Disabled people accessibility (visually)	
Disabled people accessibility (hearing impaired)	
Direct public transportation services	
Isolated area (Yes/not)	
Natural barriers (in the surroundings)	
Distance of tree from building and tree species	
Geo-Morphology characterisation	Soil configuration and slope
CNH asset Boundaries (legal boundaries as i.e. property of land)	
CNH asset Buffer zone	
Hydrological classification information: :	
Geology classification	
Soil type	
Soil Degradation mechanism	
Local and Traditional Knowledge	
Hazards local knowledge	
Construction techniques and materials traditional knowledge	
Resilient behaviours	
vernacular architecture and local traditions	
Cultural significance	
Multicultural belongings and collective memories	
Sense of Place	
Cultural, historical, anthropological and social context /Intangible heritage	
Cultural significance to community and social resilience	

Overall Description Historical readings	
Main Historical references	
Linked Collective Memories and Traditions	
Intangible values	
Ethnic traditions	
Ethnographic information	
Architectonic Heritage	
Governance	
Property Ownership (if applicable)	
Governance system	
Authorities. Define	
Management	<ul style="list-style-type: none"> • Including Private • Private • Public
Open to public: (Y/N)	
Governance Type	<ul style="list-style-type: none"> • Hierarchical governance, • Participatory or collaborative governance, • Networking and/or multi-level governance, • Community led governance
Anthropic and Economic Context	
CNH asset revenues	
CNH asset insurance costs	
Provide a description of CNH asset in its HA in term of economic situation	
GDP in the region	
CNH economic relevance in the region	
Tourism revenues	
Main economic sector in the region	
Main revenues type in the region	
CNH asset approximately yearly investment costs	
Policies and planning context	
Spatial and Urban planning structure - Urban /regional Plans/strategies (overall planning but also specific to squares, sites etc	
Pre-Disaster Recovery planning	
More information	Measures aimed at mitigating the impacts of climate change on urban HA ocal/regional/policies and measures for DDR National/local policies linking culture, urban development and DRR Measures facilitating communication and cooperation between the stakeholders, in particular between the public institutions; and between the public and private stakeholders for DDR in HA

	<p>Measures to promote capacity-building activities involving main stakeholders in Heritage and DDR</p> <p>Measures aimed at mitigating the impacts of climate change on urban HA</p> <p>Policies and initiatives integrating urban HA and the natural environment</p> <p>Legislative and regulatory measures to safeguard intangible values of urban heritage</p> <p>Measures Promoting intercultural dialogue</p> <p>Measures and Initiatives promoting cultural diversity in HA</p> <p>Measures and Initiatives promoting processes and participation, keeping active and facilitating dialogue (in planning, heritage identification and awareness)</p> <p>Measures in place to include of heritage in impact assessments</p> <p>Measures in place for monitoring of height controls in the historic urban fabric</p> <p>Measures supporting innovative income rooted in heritage and local tradition</p> <p>Public policies in place to learn from the traditions and perceptions of local communities</p> <p>Measures in place for tourism services in urban HA</p> <p>Measures in place for fostering understanding of heritage vulnerability</p> <p>Measures in place supporting capacity building efforts (educational programmes for professionals on urban heritage, ...)</p> <p>Measures for improving Information and Digital Technologies in Heritage and DDR</p> <p>Measures for developing a specific communication strategy toward the civil society (outreach and information sharing through social media)</p> <p>Measures in place supporting capacity building efforts (educational programmes for professionals on urban heritage)</p> <p>Measures for improving Information and Digital Technologies in Heritage and DDR</p> <p>Measures for developing a specific communication strategy toward the civil society (outreach and information sharing through social media)</p> <p>Mechanisms in place to assess the vulnerability of attributes of urban HA to disasters</p> <p>Mechanisms in place to assess the vulnerability of attributes of urban HA to climate change.</p> <p>Mechanisms in place to assess the vulnerability of Heritage attributes of urban HA to socio-economic pressures</p> <p>Mechanisms in place to assess the existing local skills</p> <p>Mechanisms in place to assess the human resources of urban HA</p> <p>Mechanisms in place to assess natural resources in urban HA</p> <p>Mechanisms in place to assess cultural resources in urban HA</p>
Links to other CNH catalogues and inventories and interoperability	
Existing Inventories:	Detailed historical survey
Existing National catalogues information. Indicate language	

and if the translation is available and Link

ASSESSMENT	
CNH assessment criteria	
BUILDING TANGIBLE HERITAGE LOSS	Material disaggregation <ul style="list-style-type: none"> Entity of Damage (codified scale from 1 to 3) Extension of the damage (%) Urgency of intervention (codified scale from 1 to 5)
	Humidity <ul style="list-style-type: none"> Entity of Damage (codified scale from 1 to 3) Extension of the damage (%) Urgency of intervention (codified scale from 1 to 5)
	Biological Attacks <ul style="list-style-type: none"> Entity of Damage (codified scale from 1 to 3) Extension of the damage (%) Urgency of intervention (codified scale from 1 to 5)
	Surface Layers Alteration <ul style="list-style-type: none"> Entity of Damage (codified scale from 1 to 3) Extension of the damage (%) Urgency of intervention (codified scale from 1 to 5)
	Missing Parts <ul style="list-style-type: none"> Entity of Damage (codified scale from 1 to 3) Extension of the damage (%) Urgency of intervention (codified scale from 1 to 5)
MONITORING AND ASSESSING	Predictive modelling
	spatially explicit
	Assess land use change
	Landslide management By re-grading of slopes;
	Connections among heritage sites
	Conservation priorities
	Cooperation among institutions that have complementary missions
	Cooperation of heritage sites with universities
	Take advantage of volunteers and support groups
	Local sense of ownership
	Control encroachment
	Monitor and manage water
	Manage wildfires
	Promote connections to natural areas
	Promote rules and organizational culture
	Take advantage of international organizations and exchanges
	Promote and defend and expand urban heritage
	Improve urban heritage through research and evaluation
	Prevent and prosecute crime against people and property
	Demonstrate, facilitate and promote public health and well-being
	Demonstrate, facilitate and promote good environmental behaviour
CNH ASSESSMENT CATEGORIES	Critical Loss Site destroyed: all or most of the visible key elements of the assessed site have collapsed (80–100 per cent of structure destroyed). All of the main historically valuable elements inside the cultural heritage site are destroyed.
	Severe Loss Site Severely damaged: a significant part of the visible key elements of the site has collapsed or is partially damaged (40–80 per cent of

	structure damaged) or significant military or civilian activity has contributed to extensive damage at the site Many of the main historically valuable elements of the cultural heritage site are severely damaged causing severe loss
	Moderate Loss Site Moderately damaged. Limited damage observed relating to key elements of the site (5–40 per cent of structure damaged) or where military or civilian activity has contributed to damage. Some of the main historically valuable structures inside the cultural heritage site are moderately damaged causing moderate loss.
	Minimal Loss Site Possibly damaged Assessed site structures do not appear to be damaged, but debris is visible around key site structures. None of the main historically valuable elements of the cultural heritage site are damaged.

Table 2: BUILDING Macrocategory Attributes

6.2. Urban Macrocategory Table

URBAN MACROCATEGORY ATTRIBUTES

DEFINING THE CNH ASSET AND ITS SIGNIFICANCE	
Denomination	Current Formal Name
	Local Name
	Name in other languages
Location	Country
	City
	Location
	Geographic Coordinates (Latitude / Longitude in WGS84 (Pseudo / Mercator) Spatial reference system)
	Height above sea level (m)
	GIS System
	Cadastral Data
	Photograph
Conservation Status and pre/post disaster assessment according to the Indicators of State of Conservation ISC (Glossary)	Site plan /map (Drawing or attachment)
	Value categories for Integrity
	Value categories and Conservation Status for Authenticity
	Value categories and Conservation Status for Cultural Significance
Knowledge Assessment	Other eventual value categories
	Knowledge gap -Lack of consistent and comparable data (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)
	Knowledge gap -Few evaluations of critical vulnerability factors (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)
HA Type	Final knowledge assessment evaluation (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)
	Macro/Single Site
	Mixed site (Yes/No)
	Human settlement size

	<ul style="list-style-type: none"> • Megapolis or mega-region, • Megacity, • Urban agglomeration or conurbation, • Metropolis, • Micropolis, • City, • Town, • Village or commune, • Hamlet/Isolated dwelling
	Human Settlement in CNH Size. Define:
	Human Settlement in Protected Area. Define:
HA Characterization	Degree of urbanization: <ul style="list-style-type: none"> • Very strongly urbanized • Strongly urbanized • Moderately urbanized • Weakly urbanized • Not urbanized
SHELTER Scale	Building
	District
	City
	Region
	Cross-regional
Macrocategory	Building
	URBAN
	Natural/Territorial
CNH Type	Tangible Heritage (Immovable)
	Tangible Heritage (Movable/Object)
	Intangible Heritage
CNH Category (Glossary) (registered Heritage urban area as a whole)	Archaeological site Architectural ensemble Groups of Buildings Historic Area Historic neighborhood Historic Town Historic village Historic Core/City Centre Historical urban landscapes (HUL) Military heritage and Fortifications Rock Art Scientific Heritage Urban Heritage Urban Archaeological areas World Heritage site
Other CNH asset Type	Arsenal Canal front/ lagoon front/ riverfront/seafront/ Define Designed neighbourhood /district (architectural work): Social Housing/Working class/Garden city/Siedlungen etc. Designed square Industrial heritage district Historic Market Place Historic neighbourhood Historic settlement Historic square Historic street Memorial Site

	<p>Military site with local relevance</p> <p>New urban elements to be considered. Define:</p> <p>Non-exceptional heritage elements but present in a coherent way with a relative abundance</p> <p>Open space: streets / public open spaces</p> <p>Street front (homogeneous/regular/with porticos)</p> <p>Thermal bath site</p> <p>Urban Art (e.g. artistic installation)</p> <p>Urban built form</p> <p>Urban infrastructure: material network and equipment (e.g. historic bridge, historic road)</p> <p>Urban layout</p> <p>Urban bunker</p> <p>Other site of cultural natural significance. Define:</p>
Classification / registration status	Listed in the UNESCO WHS (with Ref no and Link)
	Listed in IUCN Protected site (with Ref no and Link)
	Listed European Heritage site (with Ref no and Link)
	Listed National Heritage Site (with Ref no and Link)
	Local Heritage Site (with Ref no and Link)
	Listed in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity (with Ref no and Link)
	Other classification/registration. Detail:
Simple / Complex CNH asset	Simple site: Specify according to the UNESCO Thesaurus for descriptive terms [e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches]
	Complex Site: Specify in the cell below, indicate detailed list of CNH components (see the cell below)
Movable Heritage in the CNH asset	Detailed list of CNH components in the case of composite CNH classification
Movable Heritage in the CNH asset	Specify List of Movable Heritage
Detailed list of CNH components in the case of composite CNH classification	List Components and related Types Specify according to the UNESCO Thesaurus for descriptive terms (e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches)
CNH asset hosting events, festivals, fairs, other	Specify Periodic Events hosted, Period of the year, number of visitors
Overall identification and assessment of the HA in the current situation with its relevant values and physical components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)	Overall identification and assessment of the CNH asset in the current situation with its relevant values and physical components listed and defined that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)
Overall identification and assessment of the CNH asset in the current situation with its relevant values and physical	min 300 - max 500 words (fill in according to the indications)

components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)	
Public facilities and services	<p>(if of historical/architectural interest type and number)</p> <p>(e.g. Bank Educational/Health/ /Institution /Leisure / Religious centres/ School Shopping mall Railway station</p> <p>Other. Define:</p>
Urban fabric type	<p>(from high to low)</p> <p>High Density Cluster (Urban Centre) Dense Urban Cluster Semi-Dense Urban Cluster (Town/Urban) Suburban Grid Cell (Suburban) Rural Cluster Low Density Rural Grid Cell Very Low Density Grid Cell</p>
Historical Information	<p>Date / Century</p> <p>Historical period</p> <p>Overall description of Territorial transformations</p> <p>Timeline</p> <p>Thematic maps</p> <p>Historic fabric: Define</p> <p>Architects/Engineer/Landscapers/Archaeologist/Artist</p> <p>Patronage</p> <p>Archaeological excavations (repeatable field)</p> <p>CNH Historical Name</p> <p>Name of historical territorial area</p> <p>Historical function</p>
Function and uses	<p>Current function</p> <p>Historical function (repeatable field)</p> <p>Open to public (Y/N)</p> <p>Used by Local citizen</p> <p>Touristic use and system of admittance and management</p> <p>Number of CNH asset staff</p> <p>Number of CNH asset inhabitants</p>
Quantitative Data	<p>Current land cover</p> <p>Demographics</p> <p>Human Settlements size</p> <ul style="list-style-type: none"> Urban conurbation Metropolis City Town Village Isolated dwelling <p>Water surface</p> <p>Land Use percentage</p> <p>Residential area</p> <p>Commercial area</p>

	Industrial area
	Excavation area
	Tourist-leisure area
	Infrastructural
Links with other CNH assets	Moveable
	Intangible
	Other tangible
Inspection Information	Inspector(s) Name
	Inspector(s)' institution/affiliation
	Inspection Date:
	Type of inspection <ul style="list-style-type: none"> • Assessment • Emergency • Rainy season inspection • Regular • Other. Define:
	Inspection management <ul style="list-style-type: none"> • Private • Public • Other. Define:
	Responsibles. Define:
	Accessibility on inspection: <ul style="list-style-type: none"> • Day open access • Closed • Guarded • Other. Define:
	Weather condition on inspection <ul style="list-style-type: none"> • Raining • No raining • Other. Define

DEFINING ITS RISKS	
Hazard Type	Earthquake Flood Heatwave Subsidence Storm Wildfire <ul style="list-style-type: none"> • Directly natural • Exacerbated by natural factors • Generated by human Other. Define
Exposure Type	Hazard characterization Exposure to hazard Sensitivity (component of vulnerability) Capacity of response (component of vulnerability)
Vulnerability	Historic building environment resilience Cultural resilience Social resilience Governance and institutional resilience <ul style="list-style-type: none"> • Economic resilience Environmental resilience
RESILIENCE INDICATORS according to SHELTER	
Monitoring Time	Existing Monitoring Scheme

Existing Monitoring Scheme	
Disaster Past Events	Wildfires scale Frequency and intensity of wildfires <ul style="list-style-type: none"> • Earthquake • Flood • Heatwave • Subsidence • Storm • Wildfire scale • Wind storm • Other. Define: Period (spring fires cause different and more severe changes in many biological processes) Hectares burned Loss of human life Storms/storm wind

DEFINING ITS CONTEXTS	
Environmental context	
Overall description of prevalent situation according to Geological, hydrological, and meteorological information on the nature of the climate, soil, fault lines (if any), water table, surface water such as a river, etc.	
Ecosystem Type	Terrestrial - Urban, Terrestrial - Cropland, Terrestrial - Grassland, Terrestrial - Woodland and forest Terrestrial - Heathland and shrub Terrestrial - Sparsely vegetated land, Terrestrial – Wetlands, Fresh water - Rivers and lakes, Marine - Marine inlets and transitional waters Marine - Coastal Marine - Shelf Marine - Open ocean
Meteorological and climatological features	
Ecosystem	<ul style="list-style-type: none"> • Natural • Semi-natural
Ecosystem Services. Define:	
Drought and high temperatures events	
Storm wind	
Dry days number for year	
Rain days number for year	
Water quality: surface and groundwater	
Air quality	
Noise	
Soil degradation mechanism	
Air degradation mechanism	

Water degradation mechanism	
Inappropriate development	
Geographical Context and Physical Asset	
Overall description of CNH asset surroundings including Immediate neighbourhood, village, district, natural asset	
Physical Infrastructures above ground and networks in the surroundings (e.g. dam, tunnels) (Repeatable field):	Energy infrastructures (generation, transformation)
	Energy networks (distribution)
	Transport network (roads, paths, waterways)
	Water management and sanitation (drainage, sewage system)
Physical Infrastructures below ground and networks in the surroundings (e.g. dam, tunnels) (Repeatable field):	Energy infrastructures (generation, transformation)
	Energy networks (distribution)
	Transport network (roads, paths, waterways)
	Water management and sanitation (drainage, sewage system)
Energy infrastructures with potential risk (energy centrals, nuclear centrals, trafos, etc.)	
Energy-efficient facilities	
Water use efficiency at its facilities	
Topographical characterisation	Coastal
	Inland
	Island
	Marshland
	Mountain
	Plateau
	Riverside
Site:	Mountains overhead
	Mountain under-head
	Waterfront
	Other, Define:
Distance from water basin Distance from over heading land	
Access to CNH asset	
Access to the surroundings - This should be linked to communication/transport network	
Disabled people accessibility (wheelchair)	
Disabled people accessibility (visually)	
Disabled people accessibility (hearing impaired)	
Direct public transportation services	
Isolated area (Yes/not)	
Natural barriers (in the surroundings)	
Geo-Morphology characterisation	Soil configuration and slope

CNH asset Boundaries (legal boundaries as i.e. property of land)	
CNH asset Buffer zone	
Hydrological classification information: :	
Geology classification	
Soil type	
Soil Degradation mechanism	
Local and Traditional Knowledge	
Hazards local knowledge	
Construction techniques and materials traditional knowledge	
Resilient behaviours	
vernacular architecture and local traditions	
Cultural significance	
Multicultural belongings and collective memories	
Sense of Place	
Cultural, historical, anthropological and social context /Intangible heritage	
Cultural significance to community and social resilience	
Overall Description Historical readings	
Main Historical references	
Linked Collective Memories and Traditions	
Intangible values	
Ethnic traditions	
Ethnographic information	
Industrial Heritage	
Urban Heritage	
Governance	
Property Ownership (if applicable)	
Governance system	
Authorities. Define	
Management	<ul style="list-style-type: none"> • Including Private • Private • Public
Open to public: (Y/N)	
Governance Type	<ul style="list-style-type: none"> • Hierarchical governance, • Participatory or collaborative governance, • Networking and/or multi-level governance, • Community led governance
Design for future urban growth	
Regional policies	
Urban planning rules	
Urban conservation plans	
Rehabilitation rules	
Anthropic and Economic Context	
CNH asset revenues	

CNH asset insurance costs	
Provide a description of CNH asset in its HA in term of economic situation	
GDP in the region	
CNH economic relevance in the region	
Tourism revenues	
Main economic sector in the region	
Main revenues type in the region	
CNH asset approximately yearly investment costs	
Policies and planning context	
Spatial and Urban planning structure - Urban /regional Plans/strategies (overall planning but also specific to squares, sites etc	
Pre-Disaster Recovery planning	
More information	<p>Measures aimed at mitigating the impacts of climate change on urban HA</p> <p>Local/regional/policies and measures for DDR</p> <p>National/local policies linking culture, urban development and DDR</p> <p>Measures facilitating communication and cooperation between the stakeholders, in particular between the public institutions; and between the public and private stakeholders for DDR in HA</p> <p>Measures to promote capacity-building activities involving main stakeholders in Heritage and DDR</p> <p>Measures aimed at mitigating the impacts of climate change on urban HA</p> <p>Policies and initiatives integrating urban HA and the natural environment</p> <p>Legislative and regulatory measures to safeguard intangible values of urban heritage</p> <p>Measures Promoting intercultural dialogue</p> <p>Measures and Initiatives promoting cultural diversity in HA</p> <p>Measures and Initiatives promoting processes and participation, keeping active and facilitating dialogue (in planning, heritage identification and awareness)</p> <p>Measures in place to include of heritage in impact assessments</p> <p>Measures in place for monitoring of height controls in the historic urban fabric</p> <p>Measures supporting innovative income rooted in heritage and local tradition</p> <p>Public policies in place to learn from the traditions and perceptions of local communities</p> <p>Measures in place for tourism services in urban HA</p> <p>Measures in place for fostering understanding of heritage vulnerability</p>

	<p>Measures in place supporting capacity building efforts (educational programmes for professionals on urban heritage, ...)</p> <p>Measures for improving Information and Digital Technologies in Heritage and DDR</p> <p>Measures for developing a specific communication strategy toward the civil society (outreach and information sharing through social media)</p> <p>Measures in place supporting capacity building efforts (educational programmes for professionals on urban heritage, ...)</p> <p>Measures for improving Information and Digital Technologies in Heritage and DDR</p> <p>Measures for developing a specific communication strategy toward the civil society (outreach and information sharing through social media)</p> <p>Mechanisms in place to assess the vulnerability of attributes of urban HA to disasters</p> <p>Mechanisms in place to assess the vulnerability of attributes of urban HA to climate change.</p> <p>Mechanisms in place to assess the vulnerability of Heritage attributes of urban HA to socio-economic pressures</p> <p>Mechanisms in place to assess the existing local skills</p> <p>Mechanisms in place to assess the human resources of urban HA</p> <p>Mechanisms in place to assess natural resources in urban HA</p> <p>Mechanisms in place to assess cultural resources in urban HA</p>
Links to other CNH catalogues and inventories and interoperability	
Existing Inventories:	Inventories for Conservation areas
Existing National catalogues information. Indicate language and if the translation is available and Link	

ASSESSMENT	
CNH assessment criteria	
MONITORING AND ASSESSING	Predictive modelling
	Spatially explicit
	assess land use change
	Landslide management By re-grading of slopes;
	Connections among heritage sites
	Conservation priorities
	Cooperation among institutions that have complementary missions
	Cooperation of heritage sites with universities
	Take advantage of volunteers and support groups
	Local sense of ownership
	Control encroachment
	Monitor and manage water
	Manage wildfires
	Promote connections to natural areas
	Promote rules and organizational culture
	Take advantage of international organizations and exchanges
	Promote and defend and expand urban heritage

		Improve urban heritage through research and evaluation
		Prevent and prosecute crime against people and property
		Demonstrate, facilitate and promote public health and well-being
		Demonstrate, facilitate and promote good environmental behaviour
CNH ASSESSMENT CATEGORIES	LOSS	<p>Critical Loss</p> <p>Site destroyed: all or most of the visible key elements of the assessed site have collapsed (80–100 per cent of structure destroyed). All of the main historically valuable elements inside the cultural heritage site are destroyed.</p>
		<p>Severe Loss</p> <p>Site Severely damaged: a significant part of the visible key elements of the site has collapsed or is partially damaged (40–80 per cent of structure damaged) or significant military or civilian activity has contributed to extensive damage at the site</p> <p>Many of the main historically valuable elements of the cultural heritage site are severely damaged causing severe loss</p>
		<p>Moderate Loss</p> <p>Site Moderately damaged. Limited damage observed relating to key elements of the site (5–40 per cent of structure damaged) or where military or civilian activity has contributed to damage.</p> <p>Some of the main historically valuable structures inside the cultural heritage site are moderately damaged causing moderate loss.</p>
		<p>Minimal Loss</p> <p>Site Possibly damaged Assessed site structures do not appear to be damaged, but debris is visible around key site structures.</p> <p>None of the main historically valuable elements of the cultural heritage site are damaged.</p>

Table 3: URBAN Macrocategory Attributes

6.3. Natural Macrocategory Table

NATURAL MACROCATEGORY ATTRIBUTES

DEFINING THE CNH ASSET AND ITS SIGNIFICANCE	
Denomination	Current Formal Name
	Local Name
	Name in other languages
Location	Country
	City
	Location
	Geographic Coordinates (Latitude / Longitude in WGS84 (Pseudo / Mercator) Spatial reference system)
	Height above sea level (m)
	GIS System
	Cadastral Data
	Photograph
Conservation Status and pre/post disaster assessment according to the Indicators of State of Conservation ISC (Glossary)	Site plan /map (Drawing or attachment)
	Value categories for Integrity
	Value categories and Conservation Status for Authenticity
	Value categories and Conservation Status for Cultural Significance
Other eventual value categories	

Knowledge Assessment	Knowledge gap -Lack of consistent and comparable data (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)
	Knowledge gap -Few evaluations of critical vulnerability factors (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)
	Final knowledge assessment evaluation (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)
HA Type	Macro/Single Site
	Mixed site (Yes/No)
	Protected Area type: <ul style="list-style-type: none"> • Geoparks, • Strict Nature Reserve, • Wilderness Area, • National Park, • Natural Monument or Feature,Habitat/Species Management Area, • Protected Landscape/ Seascape, • Protected area with sustainable use of natural resources, • Marine Protected Area, • World Heritage site, • Global Geopark, • Ramsar site, • Biosphere eserve, • Natura2000 site, • River Basin, • Green Infrastructure
	Natural Area in Human Settlement. Define.
	Natural area in Building Plot. Define. (e.g. historic garden related to building).
HA Characterization	Degree of Naturalness: <ul style="list-style-type: none"> • 0 Artificial system, • 1 Transformed system, • 2 Semi-transformed system, • 3 Highly intervened system, • 4 Cultural assisted system, • 5 Cultural self-maintained system, • 6 Semi-natural system, • 7 Quasi-natural system, • 8 Sub-natural system, • 9 Natural system, • 10 Natural virgin system
SHELTER Scale	Building
	District
	City
	Region
	Cross-regional
Macrocategory	Building
	Urban
	NATURAL/TERRITORIAL
CNH Type	Tangible Heritage (Immovable),
	Tangible Heritage (Movable/Object)
	Intangible Heritage
CNH Category (Glossary)	Agricultural Heritage
	Cultural Landscape

	<p> Cultural Routes Define Geological monument Geopark Heritage Canal Historic Garden Historic Landscape Natura 2000 site Natural Heritage Prehistoric site Protected area-Strict Nature Reserve Protected area-Wilderness Area Protected area-National Park Protected area-Natural Monument Protected area-Habitat/ Species management area Protected Landscape/ Seascape Protected Area with Sustainable Use of Natural Resources Protected area-Marine Protected Area Global Geopark Protected area-Ramsar site Protected area-Biosphere reserve Protected Area World Heritage site Sacred Natural Site Silence Area Underwater heritage </p>
Other CNH asset Type	<p> Canal/Lagoon/River/ Water Basin Cemetery Conventional urban park/with lawns/flowerbeds Cultural landscape: clearly defined landscape designed and created intentionally by man Cultural landscape: organically evolved landscape Cultural landscape: associative cultural landscape Designed Park/Garden (vegetal architecture) Embankment Garden as a part of historic building Green Infrastructure Green infrastructure into the built environment Holiday resort site (e.g. beach, etc) Hermitage Site Historic zoo Land Art Local park Memorial park Monumental tree Natural area that includes designed park/garden Natural route and path Non protected Historic or traditional planting Permanence of historic land planning (e.g. centuriation, rural land parcelling, settlement location, road tracks, water and channel network) Pilgrimage Route Playground and sports field Planting (historic/traditional) Quayside Regional Park Scenic point Spiritual Site Street trees </p>

	Other site of cultural natural significance. Define:
Classification / registration status	Listed in the UNESCO WHS (with Ref no and Link)
	Listed in IUCN Protected site (with Ref no and Link)
	Listed European Heritage site (with Ref no and Link)
	Listed National Heritage Site (with Ref no and Link)
	Local Heritage Site (with Ref no and Link)
	Listed in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity (with Ref no and Link)
	Other classification/registration. Detail:
Simple / Complex CNH asset	Simple site: Specify according to the UNESCO Thesaurus for descriptive terms [e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches]
	Complex Site: Specify in the cell below, indicate detailed list of CNH components (see the cell below)
Movable Heritage in the CNH asset	Specify List of Movable Heritage
Detailed list of CNH components in the case of composite CNH classification	List Components and related Types Specify according to the UNESCO Thesaurus for descriptive terms (e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches)
CNH asset hosting events, festivals, fairs, other	Specify Periodic Events hosted, Period of the year, number of visitors
Overall identification and assessment of the HA in the current situation with its relevant values and physical components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)	Overall identification and assessment of the CNH asset in the current situation with its relevant values and physical components listed and defined that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)
Overall identification and assessment of the CNH asset in the current situation with its relevant values and physical components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)	min 300 - max 500 words (fill in according to the indications)
Natural/territorial ways and techniques of cultivation	Farming
	Fish farming
	Vineyard
	Other. Define
Design and management works	Drainage work
	Canal
	Permanence of historic land planning (e.g. centuriation, rural land parcelling, settlement location, roadtracks, water and channel network)
	Retaining wall

	Terracing
Techniques and Reinforcements and ways of traditional maintenance	Maintenance forest works Reestablishment/restoration works
	Reforestation works
	System recovery
Historical Information	Date / Century
	Historical period
	Overall description of Territorial transformations
	Timeline
	Thematic maps
	Architects/Engineer/Landscapers/Archaeologist/Artist
	Patronage
	Archaeological excavations (repeatable field)
	CNH Historical Name
	Name of historical territorial area
	Historical functions
Function and uses	Current function
	Number of CNH asset staff
	Number of CNH asset inhabitants
	Open to public (Y/N)
	Presence of inhabitants
	Touristic use and system of admittance and management
	Used by Local citizen
Quantitative Data	Built area surface
	Connectivity with other green areas
	Demographics
	Green areas surface shaded area
	Farming surface
	Road and rail surfaces
	Total Surface of Natural areas hectare
Links with other CNH assets	Water surface
	Moveable
	Intangible
Inspection Information	Other tangible
	Inspector(s)' institution/affiliation
	Inspection Date:
	Type of inspection <ul style="list-style-type: none"> • Assessment • Emergency • Rainy season inspection • Regular • Other. Define:
	Inspection management <ul style="list-style-type: none"> • Private • Public • Other. Define:
	Responsibles. Define:
	Accessibility on inspection: <ul style="list-style-type: none"> • Day open access • Closed • Guarded • Other. Define:
	Weather condition on inspection <ul style="list-style-type: none"> • Raining • No raining

	Other. Define:
DEFINING ITS RISKS	
Hazard Type	Earthquake Flood Heatwave Subsidence Storm Wildfire <ul style="list-style-type: none"> • Directly natural • Exacerbated by natural factors • Generated by human Other. Define
Exposure Type	Hazard characterization Exposure to hazard Sensitivity (component of vulnerability) Capacity of response (component of vulnerability)
Vulnerability	Historic building environment resilience Cultural resilience Social resilience Governance and institutional resilience <ul style="list-style-type: none"> • Economic resilience Environmental resilience
RESILIENCE INDICATORS according to SHELTER	
Monitoring Time Existing Monitoring Scheme	Existing Monitoring Scheme
Disaster Past Events	Wildfires scale Frequency and intensity of wildfires <ul style="list-style-type: none"> • Earthquake • Flood • Heatwave • Subsidence • Storm • Wildfire scale • Wind storm • Other. Define: Period (spring fires cause different and more severe changes in many biological processes) Hectares burned Loss of human life Storms/storm wind

DEFINING ITS CONTEXTS	
Environmental context	
Overall description of prevalent situation according to Geological, hydrological, and meteorological information on the nature of the climate, soil, fault lines (if any), water table, surface water such as a river, etc.	

Ecosystem Type	Terrestrial - Urban, Terrestrial - Cropland, Terrestrial - Grassland, Terrestrial - Woodland and forest Terrestrial - Heathland and shrub Terrestrial - Sparsely vegetated land, Terrestrial – Wetlands, Fresh water - Rivers and lakes, Marine - Marine inlets and transitional waters Marine - Coastal Marine - Shelf Marine - Open ocean
Meteorological and climatological features	
Ecosystem	<ul style="list-style-type: none"> Natural Semi-natural
Ecosystem Services. Define:	
Drought and high temperatures events	
Storm wind	
Dry days number for year	
Rain days number for year	
Water quality: surface and groundwater	
Air quality	
Noise	
Soil degradation mechanism	
Air degradation mechanism	
Water degradation mechanism	
Inappropriate development	
Resource extraction damages	
Oil spills	
Mining	
Deforestation works	
Illegal logging	
Poaching	
Agricultural encroachment	
Threats induced by armed conflict and war	
Threats induced by earthquakes	
Invasive species	
Geographical Context and Physical Asset	
Overall description of CNH asset surroundings including Immediate neighbourhood, village, district, natural asset	
Physical Infrastructures above ground and networks in the surroundings (e.g. dam, tunnels) (Repeatable field):	Energy infrastructures (generation, transformation)
	Energy networks (distribution)
	Transport network (roads, paths, waterways)
	Water management and sanitation (drainage, sewage system)
Physical Infrastructures below ground and networks	Energy infrastructures (generation, transformation)
	Energy networks (distribution)
	Transport network (roads, paths, waterways)

in the surroundings (e.g. dam, tunnels) (Repeatable field):	Water management and sanitation (drainage, sewage system)
Energy infrastructures with potential risk (energy centrals, nuclear centrals, trafos, etc.)	
Energy-efficient facilities	
Water use efficiency at its facilities	
Topographical characterisation	Coastal
	Inland
	Island
	Marshland
	Mountain
	Plateau
Site:	Riverside
	Mountains overhead
	Mountain under-head
	Waterfront
Distance from water basin Distance from over heading land	Other, Define:
Access to CNH asset	
Access to the surroundings - This should be linked to communication/transport network	
Disabled people accessibility (wheelchair)	
Disabled people accessibility (visually)	
Disabled people accessibility (hearing impaired)	
Direct public transportation services	
Park with gateways	
Presence of orientation signs	
Presence of a range of languages in signs	
Presence of crossed by public roads	
Presence of well-mapped and clearly marked pathways	
Random path-making policy	
Presence of hiking paths	
Presence of bicycle routes	
Presence of walking trails	
Presence of picnic ground areas	
Presence of campgrounds areas	
Surroundings communities	
Isolated area (Yes/not)	

Natural barriers (in the surroundings)	
Geo-Morphology characterisation	Soil configuration and slope
CNH asset Boundaries (legal boundaries as i.e. property of land)	
CNH asset Buffer zone	
Hydrological classification information: :	
Geology classification	
Soil type	
Soil Degradation mechanism	
Biodiversity in the HA	Main variety identification
	Vegetation types Native of the area
	Other Vegetation type
	average of species types
	Rare species
	Century-old trees
	fire-adapted and fire-dependent vegetation
	Trunk diameter of the top five most common species
	Animals species type with huge numbers
	Animals species with low numbers
	Rare species
	Presence of Erosion areas
	Ancient wooded area
Local and Traditional Knowledge	
Hazards local knowledge	
Construction techniques and materials traditional knowledge	
Resilient behaviours	
vernacular architecture and local traditions	
Cultural significance	
Multicultural belongings and collective memories	
Sense of Place	
Cultural, historical, anthropological and social context /Intangible heritage	
Cultural significance to community and social resilience	
Overall Description Historical readings	
Main Historical references	
Linked Collective Memories and Traditions	
Intangible values	
Ethnic traditions	
Ethnographic information	
Natural Heritage	
Landscape Perception	
Governance	
Property Ownership (if applicable)	

Governance system	
Authorities. Define	
Management	<ul style="list-style-type: none"> • Including Private • Private • Public
Open to public: (Y/N)	
Governance Type	<ul style="list-style-type: none"> • Hierarchical governance, • Participatory or collaborative governance, • Networking and/or multi-level governance, • Community led governance
Public agencies	
Wildlife Service	
Responsibles for fire prevention and control	
Municipal Council involvement	
National and regional governmental agencies	
NGOs	
Community Groups	
Local associations	
A watershed organization composed of representatives of stakeholders	
Organizations	
Control policies	
Anthropic and Economic Context	
CNH asset revenues	
CNH asset insurance costs	
Provide a description of CNH asset in its HA in term of economic situation	
GDP in the region	
CNH economic relevance in the region	
Tourism revenues	
Main economic sector in the region	
Main revenues type in the region	
CNH asset approximately yearly investment costs	
Policies and planning context	
Spatial and Urban planning structure - Urban /regional Plans/strategies (overall planning but also specific to squares, sites etc	
Pre-Disaster Recovery planning	
More information	local/regional/policies for Heritage local/regional/policies and measures for DDR Cooperation among institutions that have complementary missions Take advantage of volunteers and support groups

	<p>Demonstrate, facilitate and promote good environmental behaviour</p> <p>Measures facilitating communication and cooperation between the stakeholders, in particular between the public institutions; and between the public and private stakeholders for DDR in HA</p> <p>Measures to promote capacity-building activities involving main stakeholders in Heritage and DDR</p> <p>Measures aimed at mitigating the impacts of climate change on HA</p> <p>Legislative and regulatory measures to safeguard intangible values</p> <p>Measures Promoting intercultural dialogue</p> <p>Measures and Initiatives promoting cultural diversity</p> <p>Measures and Initiatives promoting processes and participation, keeping active and facilitating dialogue (in planning, heritage identification and awareness)</p> <p>Measures in place to include heritage in impact assessments</p> <p>Measures in place supporting capacity building efforts (educational programmes for professionals on heritage, ...</p> <p>Measures for improving Information and Digital Technologies in Heritage and DDR</p> <p>Measures for developing a specific communication strategy toward the civil society (outreach and information sharing through social media</p> <p>Mechanisms in place to assess the vulnerability of attributes of building to disasters.</p> <p>Mechanisms in place to assess the vulnerability of attributes of building to climate change.</p> <p>Mechanisms in place to assess the vulnerability of Heritage attributes of building to socio-economic pressures</p> <p>Mechanisms in place to assess the existing local skills</p> <p>Mechanisms in place to assess the vulnerability of attributes of building to climate change.</p> <p>Mechanisms in place to assess the vulnerability of Heritage attributes of building to socio-economic pressures</p> <p>Mechanisms in place to assess the existing local skills</p>
Links to other CNH catalogues and inventories and interoperability	
Existing Inventories:	Vegetarian species inventory
Existing National catalogues information. Indicate language and if the translation is available and Link	

ASSESSMENT	
CNH assessment criteria	
DEGREE OF NATURALNESS (from the most natural to the least)	<p>10 Natural virgin system (only natural elements and processes are present)</p> <p>9 Natural system (few exotic species are present)</p> <p>8 Sub-natural system (there is possibly an extended presence of wild exotic species, but with low impact)</p> <p>7 Quasi-natural system (extensive human activities, but with low physical impact)</p> <p>6 Semi-natural system (human infrastructure is scarce or concentrated; wild exotic species are possibly dominant, with native species considerably reduced)</p>

	<p>5 Cultural self-maintained system (processes are conditioned by extensive human activities, with native species altered and occasionally managed)</p> <p>4 Cultural assisted system (there are important infrastructures and/or conditioning of the physical environment, with forced biological production and moderate addition of matter, usually with pollution added)</p> <p>3 Highly intervened system (still includes areas with natural, cultivated, or breeding biological production, mixed in a mosaic with buildings and other infrastructure)</p> <p>2 Semi-transformed system (biological production is not dominant; human elements predominate)</p> <p>1 Transformed system (human processes govern, with clear dominance of artificial elements)</p> <p>0 Artificial system (there is no self-maintained macroscopic life; microscopic life is absent or in containers)</p>
MONITORING AND ASSESSING	Specific Rules and Law restrictions
	Control of urban sewage, runoff and solid waste
	Environmental education programs
	Compliance signs
	Stern warnings (to stop people setting fires)
	fire roads
	Preventing littering that harms or kills wildlife
	Controlling poaching
	Control encroachment
	Waste system
	managing water quality and quantity (to protect biodiversity from pollution and extremes of drought and flooding) Guideline 15)
	Vegetation Management
	Managing wildfires i(n ways that protect native species and ecosystems) (Guideline 16);
	Fire-safe landscaping
	Nearby fire-prone areas
	Watershed (also called a catchment area or drainage basin)
	Pollution monitoring
	Controllers
	Direct link with responsible for fire prevention and control in neighbouring urban areas
	Wi-fi
	Telephone
	Shelter
	predictive modelling spatially explicit
	assess land use change
	Landslide management By re-grading of slopes;
	connections among heritage sites
	conservation priorities
	Cooperation among institutions that have complementary missions
	Cooperation of heritage sites with universities
	Take advantage of volunteers and support groups
	Local sense of ownership
	Control encroachment
	Monitor and manage water
	Manage wildfires
	Promote connections to natural areas

		Promote rules and organizational culture
		Take advantage of international organizations and exchanges
		Promote and defend and expand urban heritage
		Improve urban heritage through research and evaluation
		Prevent and prosecute crime against people and property
		Demonstrate, facilitate and promote public health and well-being
		Demonstrate, facilitate and promote good environmental behaviour
CNH ASSESSMENT CATEGORIES	LOSS	<p>Critical Loss</p> <p>Site destroyed: all or most of the visible key elements of the assessed site have collapsed (80–100 per cent of structure destroyed). All of the main historically valuable elements inside the cultural heritage site are destroyed.</p>
		<p>Severe Loss</p> <p>Site Severely damaged: a significant part of the visible key elements of the site has collapsed or is partially damaged (40–80 per cent of structure damaged) or significant military or civilian activity has contributed to extensive damage at the site</p> <p>Many of the main historically valuable elements of the cultural heritage site are severely damaged causing severe loss</p>
		<p>Moderate Loss</p> <p>Site Moderately damaged. Limited damage observed relating to key elements of the site (5–40 per cent of structure damaged) or where military or civilian activity has contributed to damage.</p> <p>Some of the main historically valuable structures inside the cultural heritage site are moderately damaged causing moderate loss.</p>
		<p>Minimal Loss</p> <p>Site Possibly damaged Assessed site structures do not appear to be damaged, but debris is visible around key site structures.</p> <p>None of the main historically valuable elements of the cultural heritage site are damaged.</p>

Table 4: NATURAL Macrocategory Attributes

6.4. Compared attributes of Building, Urban, Natural Macrocategories

Mac- rocat- egory	BUILDING	URBAN	NATURAL
-------------------------	----------	-------	---------

DEFINING THE CNH ASSET AND ITS SIGNIFICANCE

Defining the CNH asset and its significance	Denominations Current Formal Name Local Name Name in other languages Location Country City Geographic Coordinates (Latitude / Longitude in WGS84 (Pseudo / Mercator) Spatial reference system) Height above sea level (m) GIS System Cadastral Data Photograph Site plan /map (Drawing or attachment)	Denomination Current Formal Name Local Name Name in other languages Location Country Region-state Geographic Coordinates (Latitude / Longitude in WGS84 (Pseudo / Mercator) Spatial reference system) Height above sea level (m) GIS System Cadastral Data Photograph Site plan /map (Drawing or attachment)	Denominations Current Formal Name Local Name Name in other languages Location Country/Countries City Geographic Coordinates (Latitude / Longitude in WGS84 (Pseudo / Mercator) Spatial reference system) Height above sea level (m) GIS System Cadastral Data Photograph Site plan /map (Drawing or attachment)
	Conservation Status and pre/post disaster assessment according to the Indicators of State of Conservation ISC (Glossary) Value categories for Integrity Value categories and Conservation Status for Authenticity Value categories and Conservation Status for Cultural Significance Other eventual value categories	Conservation Status and pre/post disaster assessment according to the Indicators of State of Conservation ISC (Glossary) Value categories for Integrity Value categories and Conservation Status for Authenticity Value categories and Conservation Status for Cultural Significance Other eventual value categories	Conservation Status and pre/post disaster assessment according to the Indicators of State of Conservation ISC (Glossary) Value categories for Integrity Value categories and Conservation Status for Authenticity Value categories and Conservation Status for Cultural Significance Other eventual value categories
	Knowledge Assessment Knowledge gap -Lack of consistent and comparable data (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge) Knowledge gap -Few evaluations of critical vulnerability factors (KL1: Limited knowledge, KL2: Normal	Knowledge Assessment Knowledge gap -Lack of consistent and comparable data (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge) Knowledge gap -Few evaluations of critical vulnerability factors (KL1: Limited knowledge, KL2: Normal	Knowledge Assessment Knowledge gap -Lack of consistent and comparable data (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge) Knowledge gap -Few evaluations of critical vulnerability factors (KL1: Limited knowledge, KL2: Normal

	knowledge, KL3: Full knowledge) Final knowledge assessment evaluation (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)	knowledge, KL3: Full knowledge) Final knowledge assessment evaluation (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)	knowledge, KL3: Full knowledge) Final knowledge assessment evaluation (KL1: Limited knowledge, KL2: Normal knowledge, KL3: Full knowledge)
	HA Type Macro/Single Site Mixed site (Yes/No) Building in Human settlement. Building in Natural Site, define.	HA Type Macro/Single Site Mixed site (Yes/No) Human settlement size <ul style="list-style-type: none"> • Megapolis or megalopolis, • Megacity, • Urban agglomeration or conurbation, • Metropolis, • Micropolis, • City, • Town, • Village or commune, • Hamlet/Isolated dwelling Human Settlement in CNH Size. Define: Human Settlement in Protected Area. Define:	HA Type Macro/Single Site Mixed site (Yes/No) Protected Area type: <ul style="list-style-type: none"> • Geoparks, • Strict Nature Reserve, • Wilderness Area, • National Park, • Natural Monument or Feature, Habitat/Species Management Area, • Protected Landscape/ Seascape, • Protected area with sustainable use of natural resources, • Marine Protected Area, • World Heritage site, • Global Geopark, • Ramsar site, • Biosphere reserve, • Natura2000 site, • River Basin, • Green Infrastructure Natural Area in Human Settlement. Define. Natural area in Building Plot. Define. (e.g. historic garden related to building).
	HA Characterization Single Building / Complex building	HA Characterization Degree of urbanisation: <ul style="list-style-type: none"> • Very strongly urbanized, • Strongly urbanized, • Moderately urbanized, • Weakly urbanized, • Not urbanized 	HA Characterization Degree of Naturalness <ul style="list-style-type: none"> • 0 Artificial system, • 1 Transformed system, • 2 Semi-transformed system, • 3 Highly intervened system, • 4 Cultural assisted system, • 5 Cultural self-maintained system,

			<ul style="list-style-type: none"> • 6 Semi-natural system, • 7 Quasi-natural system, • 8 Sub-natural system, • 9 Natural system, • 10 Natural virgin system
	SHELTER Scale Building District City Region Cross-regional	SHELTER Scale Building District City Region Cross-regional	SHELTER Scale Building District City Region Cross-regional
	Macrocategory Building Urban Natural/Territorial	Macrocategory Building Urban Natural/Territorial	Macrocategory Building Urban Natural/Territorial
	CNH Type Tangible Heritage (Immovable), Tangible Heritage (Movable/Object) Intangible Heritage	CNH Type Tangible Heritage (Immovable) Tangible Heritage (Movable/Object) Intangible Heritage	CNH Type Tangible Heritage (Immovable) Tangible Heritage (Movable/ Object) Intangible Heritage
	CNH Category (Glossary) Archaeological Heritage Architectural Heritage Habitation urbaine Historic Building Industrial and technical heritage Monuments Vernacular architecture World Heritage	CNH Category (Glossary) (registered Heritage urban area as a whole) (world/ national /local) Archaeological site Architectural ensemble Groups of Buildings Historic Area Historic neighborhood Historic Town Historic village Historic Core/City Centre Historical urban landscapes (HUL) Military heritage and Fortifications Rock Art	CNH Category (Glossary) Agricultural Heritage Cultural Landscape Cultural Routes Define Geological monument Geopark Heritage Canal Historic Garden Historic Landscape Natura 2000 site Natural Heritage Prehistoric site Protected area-Strict Nature Reserve Protected area-Wilderness Area Protected area-National Park Protected area-Natural Monument

		Scientific Heritage Urban Heritage Urban Archaeological areas World Heritage site	Protected area-Habitat/ Species management area Protected Landscape/ Sea- scape Protected Area with Sus- tainable Use of Natural Re- sources Protected area-Marine Protected Area Global Ge- opark Protected area-Ramsar site Protected area-Biosphere reserve Protected Area World Herit- age site Sacred Natural Site Silence Area Underwater heritage
	Other CNH asset Type Aquarium building Architectonic painting Architectonic inscription Architectonic sculpture Archive (including sound, photographic and cine- matographic archive) Building holding collection Cinema Collection Building relevant to local history and tradition (civic/ educational/health/leisure/ military/religious/etc.) Chapel Historic factory Historic farm Historic/designed holiday resort Historic rural construction Library Market building Memorial and traditional lo- cal monument Monastery Monumental sculpture Museum Refuges cultural property Rural architecture Sanctuary Theatre Thermal building Town hall Traditional local building or construction	Other CNH asset Type Arsenal Canal front/ lagoon front/ riverfront/seafront/ Define Designed neighbourhood /district (architectural work): Social Hous- ing/Working class/Garden city/Siedlungen etc. Designed square Industrial heritage district Historic Market Place Historic neighbourhood Historic settlement Historic square Historic street Memorial Site Military site with local rele- vance New urban elements to be considered. Define: Non-exceptional heritage elements but present in a coherent way with a rela- tive abundance Open space: streets / pub- lic open spaces Street front (homogene- ous/regular/with porticos) Thermal bath site Urban Art (e.g. artistic in- stallation) Urban built form Urban infrastructure: ma- terial network and equip- ment (e.g. historic bridge, historic road)	Other CNH asset Type Canal/Lagoon/River/ Water Basin Cemetery Conventional urban park/with lawns/flowerbeds Designed Park/Garden (vegetal architecture) Embankment Garden as a part of historic building Green Infrastructure Green infrastructure into the built environment Holiday resort site (e.g. beach, etc) Hermitage Site Historic zoo Land Art Local park Memorial park Monumental tree Natural area that includes designed park/garden Natural route and path Non protected Historic or traditional planting Permanence of historic land planning (e.g. centuriation, rural land parcelling, settle- ment location, road tracks, water and channel net- work) Pilgrimage Route Playground and sports field Planting (historic/tradi- tional)

Underground architecture (bunker /cistern etc.)	Urban layout Urban bunker	Quayside Regional Park Scenic point Spiritual Site Street trees
Other building of cultural natural significance. Define:	Other site of cultural natural significance. Define:	Other site of cultural natural significance. Define:
Classification/ registration status	Classification / registration status	Classification / registration status
Listed in the UNESCO WHS (with Ref no and Link) Listed in IUCN Protected site (with Ref no and Link) Listed European Heritage site (with Ref no and Link) Listed National Heritage Site (with Ref no and Link) Local Heritage Site (with Ref no and Link) Listed in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity (with Ref no and Link) Other classification/registration. Detail:	Listed in the UNESCO WHS (with Ref no and Link) Listed in IUCN Protected site (with Ref no and Link) Listed European Heritage site (with Ref no and Link) Listed National Heritage Site (with Ref no and Link) Local Heritage Site (with Ref no and Link) Listed in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity (with Ref no and Link) Other classification/registration. Detail:	Listed in the UNESCO WHS (with Ref no and Link) Listed in IUCN Protected site (with Ref no and Link) Listed European Heritage site (with Ref no and Link) Listed National Heritage Site (with Ref no and Link) Local Heritage Site (with Ref no and Link) Listed in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity (with Ref no and Link) Other classification/registration. Detail:
Simple / Complex CNH asset	Simple / Complex CNH asset	Simple / Complex CNH asset
Movable Heritage in the CNH asset	Movable Heritage in the CNH asset	Movable Heritage in the CNH asset
Detailed list of CNH components in the case of composite CNH classification	Detailed list of CNH components in the case of composite CNH classification	Detailed list of CNH components in the case of composite CNH classification
CNH asset hosting events, festivals, fairs, other	CNH asset hosting events, festivals, fairs, other	CNH asset hosting events, festivals, fairs, other
Overall identification and assessment of the HA in the current situation with its relevant values and	Overall identification and assessment of the HA in the current situation with its relevant values and	Overall identification and assessment of the HA in the current situation with its relevant values and

physical components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)	physical components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)	physical components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)
Overall identification and assessment of the CNH asset in the current situation with its relevant values and physical components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)	Overall identification and assessment of the CNH asset in the current situation with its relevant values and physical components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)	Overall identification and assessment of the CNH asset in the current situation with its relevant values and physical components listed and defined (that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)
BUILT Environment and archaeological sites Material and Techniques 300 words max Overall description of the historical Materials and Techniques of CNH asset in relation to its components. Link to Related Resources Main material of the structure Secondary material of the structure (if any) Primary structure construction technique (rubble masonry, sack masonry, load-bearing masonry, adobe, adobe and timber, reinforced concrete pillars, etc..) Horizontal structure material Roof material	URBAN Public facilities and services (if of historical/architectural interest type and number) (e.g. Bank Educational/Health/ /Institution /Leisure / Religious centres/ School Shopping mall Railway station Other. Define:	NATURAL/TERRITORIAL ways and techniques of cultivation Farming Fish farming Vineyard Other. Define Design and management works Permanence of historic land planning (e.g. centuriation, rural land parcelling, settlement location, road tracks, water and channel networks) Terracing Retaining wall Drainage work Canal

Canopy/shelter for archeological sites		
BUILT environment and archaeological site' restauration and reinforcements Latest Intervention Date and Type Link to Related Ressources Reinforced-concrete slab: Roof (yes/no) Reinforced-concrete slab:vault (yes/no) Reinforced-concrete slab:horizontal structures (yes/no) Regeneration of walls with concrete injections (yes/no) Tie bars (yes/no) Concrete underpinning or plinth (yes/no) Prestressed cables - walls or other elements (yes/no) Micropile underpinning bracket (yes/no) Roof/floor edge beam (yes/no) Canopy/shelter for archeological sites	URBAN fabric type (from high to low) High Density Cluster (Urban Centre) Dense Urban Cluster Semi-Dense Urban Cluster (Town/Urban) Suburban Grid Cell (Suburban) Rural Cluster Low Density Rural Grid Cell Very Low Density Grid Cell	NATURAL/TERRITORIAL Techniques and Reinforcements and ways of traditional maintenance Reforestation works Maintenance forest works Reestablishment/restoration works System recovery
Historical Information Date of construction/Century Historical period Overall description of Territorial and Environmental transformations Timeline Architects/Engineer/Landscapers/Archaeologist/Artist	Historical Information Date of construction/Century Historical period Overall description of Territorial and Environmental transformations Timeline Architects/Engineer/Landscapers/Archaeologist/Artist	Historical Information Date of construction/Century Historical period Overall description of Territorial and Environmental transformations Timeline Architects/Engineer/Landscapers/Archaeologist/Artist

	Patronage	Patronage	Patronage
	Archaeological excavations (repeatable field)	Archaeological excavations (repeatable field)	Archaeological excavations (repeatable field)
	CNH Historical Name	CNH Historical Name	CNH Historical Name
	Name of historical territorial area	Name of historical territorial area	Name of historical territorial area
	Function and uses	Function and uses	Function and uses
	Current function Number of CNH asset staff Number of CNH asset Open to public (Y/N) Presence of inhabitants Touristic use and system of admittance and management Used by Local citizen	Current function Number of CNH asset staff Number of CNH asset inhabitants Open to public (Y/N) Presence of inhabitants Touristic use and system of admittance and management Used by Local citizen	Current function Number of CNH asset staff Number of CNH asset inhabitants Open to public (Y/N) Presence of inhabitants Touristic use and system of admittance and management Used by Local citizen
	Quantitative Data	Quantitative Data	Quantitative Data
	Dimensions Land cover Number of floors Volume	Current land cover Demographics Human Settlements size Water surface Land Use percentage Residential area Commercial area Industrial area Excavation area Tourist-leisure area Infrastructural Connectivity Urbanization degree (from high to low): <ul style="list-style-type: none"> • Very strongly urbanized • Strongly urbanized • Moderately urbanized • Weakly urbanized • Not urbanized 	Built area surface Connectivity with other green areas Demographics Green areas surface shaded area Farming surface Road and rail surfaces Total Surface of Natural areas hectare Water surface
	Links with other CNH assets	Links with other CNH assets	Links with other CNH assets

Inspection Information	Inspection Information	Inspection Information
<p>Inspector(s) Name</p> <p>Inspector(s)' institution/af-filiation</p> <p>Inspection Date:</p> <p>Type of inspection</p> <ul style="list-style-type: none"> • Assessment • Emergency • Rainy season in-spection • Regular • Other. Define: <p>Inspection management</p> <ul style="list-style-type: none"> • Private • Public • Other. Define: <p>Responsible. Define:</p> <p>Accessibility on inspection:</p> <ul style="list-style-type: none"> • Day open access • Closed • Guarded • Other. Define: <p>Weather condition on in-spection</p> <ul style="list-style-type: none"> • Raining • No raining • Other. Define: 	<p>Inspector(s) Name</p> <p>Inspector(s)' institution/af-filiation</p> <p>Inspection Date:</p> <p>Type of inspection</p> <ul style="list-style-type: none"> • Assessment • Emergency • Rainy season in-spection • Regular • Other. Define: <p>Inspection management</p> <ul style="list-style-type: none"> • Private • Public • Other. Define: <p>Responsible. Define:</p> <p>Accessibility on inspection:</p> <ul style="list-style-type: none"> • Day open access • Closed • Guarded • Other. Define: <p>Weather condition on in-spection</p> <ul style="list-style-type: none"> • Raining • No raining • Other. Define: 	<p>Inspector(s) Name</p> <p>Inspector(s)' institution/af-filiation</p> <p>Inspection Date:</p> <p>Type of inspection</p> <ul style="list-style-type: none"> • Assessment • Emergency • Rainy season in-spection • Regular • Other. Define: <p>Inspection management</p> <ul style="list-style-type: none"> • Private • Public • Other. Define: <p>Responsible. Define:</p> <p>Accessibility on inspection:</p> <ul style="list-style-type: none"> • Day open access • Closed • Guarded • Other. Define: <p>Weather condition on in-spection</p> <ul style="list-style-type: none"> • Raining • No raining • Other. Define:

DEFINING ITS RISKS

Defining the CNH asset and its significance	Hazard Type Earthquake Flood Heatwave Subsidence Storm Wildfire <ul style="list-style-type: none"> • Directly natural • Exacerbated by natural factors • Generated by human Other. Define	Hazard Type Earthquake Flood Heatwave Subsidence Storm Wildfire <ul style="list-style-type: none"> • Directly natural • Exacerbated by natural factors • Generated by human Other. Define	Hazard Type Earthquake Flood Heatwave Subsidence Storm Wildfire <ul style="list-style-type: none"> • Directly natural • Exacerbated by natural factors • Generated by human Other. Define
	Exposure Type Hazard characterization, Exposure to hazard Sensitivity (component of vulnerability) Capacity of response (component of vulnerability)	Exposure Type Hazard characterization, Exposure to hazard, Sensitivity (component of vulnerability), Capacity of response (component of vulnerability)	Exposure Type Hazard characterization Exposure to hazard Sensitivity (component of vulnerability) Capacity of response (component of vulnerability)
	RESILIENCE INDICATORS (according to SHLTER). Define:	RESILIENCE INDICATORS according to SHLTER) Define:	RESILIENCE INDICATORS according to SHLTER) Define:
	Monitoring Time Existing Monitoring Scheme	Monitoring Time Existing Monitoring Scheme	Monitoring Time Existing Monitoring Scheme

	Disaster Past Events	Disaster Past Events	Disaster Past Events
	<p>Frequency</p> <p>Intensity and scale</p> <ul style="list-style-type: none"> • Earthquake • Flood • Heatwave • Subsidence • Storm • Wildfire scale • Windstorm • Other. Define: <p>Hectares affected (burned/flooded, etc.)</p> <p>Loss of human life</p> <p>Period of the year</p>	<p>Frequency</p> <p>Intensity and scale</p> <ul style="list-style-type: none"> • Earthquake • Flood • Heatwave • Subsidence • Storm • Wildfire scale • Windstorm • Other. Define: <p>Hectares affected (burned/flooded, etc.)</p> <p>Loss of human life</p> <p>Period of the year</p>	<p>Frequency</p> <p>Intensity and scale</p> <ul style="list-style-type: none"> • Earthquake • Flood • Heatwave • Subsidence • Storm • Wildfire scale • Windstorm • Other. Define: <p>Hectares affected (burned/flooded, etc.)</p> <p>Loss of human life</p> <p>Period of the year</p>

DEFINING THE CNH ASSET IN ITS CONTEXT

Environmental Context

ENVIRONMENTAL CONTEXT	Overall description of prevalent situation according to Geological, hydrological, and meteorological information on the nature of the climate, soil, fault lines (if any), water table, surface water such as a river, etc.	Overall description of prevalent situation according to Geological, hydrological, and meteorological information on the nature of the climate, soil, fault lines (if any), water table, surface water such as a river, etc.	Overall description of prevalent situation according to Geological, hydrological, and meteorological information on the nature of the climate, soil, fault lines (if any), water table, surface water such as a river, etc.
	Ecosystem Type Terrestrial - Urban, Terrestrial - Cropland, Terrestrial - Grassland, Terrestrial - Woodland and forest Terrestrial - Heathland and shrub Terrestrial - Sparsely vegetated land Terrestrial - Wetlands Fresh water - Rivers and lakes, Marine - Marine inlets and transitional waters Marine - Coastal Marine - Shelf Marine - Open ocean	Ecosystem Type Terrestrial - Urban, Terrestrial - Cropland, Terrestrial - Grassland, Terrestrial - Woodland and forest Terrestrial - Heathland and shrub Terrestrial - Sparsely vegetated land Terrestrial - Wetlands Fresh water - Rivers and lakes, Marine - Marine inlets and transitional waters Marine - Coastal Marine - Shelf Marine - Open ocean	Ecosystem Type Terrestrial - Urban, Terrestrial - Cropland, Terrestrial - Grassland, Terrestrial - Woodland and forest Terrestrial - Heathland and shrub Terrestrial - Sparsely vegetated land, Terrestrial - Wetlands, Fresh water - Rivers and lakes, Marine - Marine inlets and transitional waters Marine - Coastal Marine - Shelf Marine - Open ocean
	Meteorological and climatological features	Meteorological and climatological features	Meteorological and climatological features
	Ecosystem <ul style="list-style-type: none"> Natural semi-natural Ecosystem Services. Define:	Ecosystem <ul style="list-style-type: none"> Natural semi-natural Ecosystem Services. Define:	Ecosystem <ul style="list-style-type: none"> Natural semi-natural Ecosystem Services. Define:
	Drought and high temperatures events	Drought and high temperatures events	Drought and high temperatures events
	Storm wind	Storm wind	Storm wind
	Dry days number for year	Dry days number for year	Dry days number for year

	Rain days number for year	Rain days number for year	Rain days number for year
	Water quality: surface and groundwater	Water quality: surface and groundwater	Water quality: surface and groundwater
	Air quality	Air quality	Air quality
	Noise	Noise	Noise
	Soil degradation mechanism	Soil degradation mechanism	Soil degradation mechanism
	Air degradation mechanism	Air degradation mechanism	Air degradation mechanism
	Water degradation mechanism	Water degradation mechanism	Water degradation mechanism
	Inappropriate development	Inappropriate development	Inappropriate development
			Agricultural encroachment
			Deforestation works
			Illegal logging
			Invasive species
			Mining
			Oil spills
			Resource extraction damages
			Poaching
			Threats induced by armed conflict and war
			Threats induced by natural hazards. Define:

Geographical Context and Physical Asset

GEOGRAPHICAL CONTEXT AND PHYSICAL ASSET	Overall description of CNH asset surroundings including Immediate neighbourhood, village, district, natural asset	Overall description of CNH asset surroundings including Immediate neighbourhood, village, district, natural asset	Overall description of CNH asset surroundings including Immediate neighbourhood, village, district, natural asset
	Physical Infrastructures above ground and networks in the surroundings (e.g. dam) (Repeatable field):	Physical Infrastructures above ground and networks in the surroundings (e.g. dam, tunnels) (Repeatable field):	Physical Infrastructures above ground and networks in the surroundings (e.g. dam, tunnels) (Repeatable field):
	Energy infrastructures (generation, transformation)	Energy infrastructures (generation, transformation)	Energy infrastructures (generation, transformation)
	Energy networks (distribution)	Energy networks (distribution)	Energy networks (distribution)
	Transport network (roads, paths, waterways)	Transport network (roads, paths, waterways)	Transport network (roads, paths, waterways)
	Water management and sanitation (drainage, sewage system)	Water management and sanitation (drainage, sewage system)	Water management and sanitation (drainage, sewage system)
	Physical Infrastructures below ground and networks in the surroundings (e.g. tunnel) (Repeatable field):	Physical Infrastructures below ground and networks in the surroundings (e.g. tunnel) (Repeatable field):	Physical Infrastructures below ground and networks in the surroundings (e.g. tunnel) (Repeatable field):
	Energy infrastructures (generation, transformation)	Energy infrastructures (generation, transformation)	Energy infrastructures (generation, transformation)
	Energy networks (distribution)	Energy networks (distribution)	Energy networks (distribution)
	Transport network (roads, paths, waterways)	Transport network (roads, paths, waterways)	Transport network (roads, paths, waterways)
	Water management and sanitation (drainage, sewage system)	Water management and sanitation (drainage, sewage system)	Water management and sanitation (drainage, sewage system)

	Energy infrastructures with potential risk (energy centrals, nuclear centrals, trafos, etc.)	Energy infrastructures with potential risk (energy centrals, nuclear centrals, trafos, etc.)	Energy infrastructures with potential risk (energy centrals, nuclear centrals, trafos, etc.)
	Energy-efficient facilities	Energy-efficient facilities	Energy-efficient facilities
	Water use efficiency at its facilities	Water use efficiency at its facilities	Water use efficiency at its facilities
	Topographical characterisation <ul style="list-style-type: none"> Coastal Interland Island Marshland Mountain Plateau Riverside 	Topographical characterisation <ul style="list-style-type: none"> Coastal Interland Island Marshland Mountain Plateau Riverside 	Topographical characterisation <ul style="list-style-type: none"> Coastal Interland Island Marshland Mountain Plateau Riverside
	Site <ul style="list-style-type: none"> Mountains overhead Mountain underhead Waterfront Other. Define 	Site <ul style="list-style-type: none"> Mountains overhead Mountain underhead Waterfront Other. Define 	Site <ul style="list-style-type: none"> Mountains overhead Mountain underhead Waterfront Other. Define
	Distance from water basin Distance from overhead- ing land	Distance from water basin Distance from overhead- ing land	Distance from water basin Distance from overhead- ing land
	Access to CNH asset	Access to CNH asset	Access to CNH asset
	Access to the surroundings -This should be linked to communication/transport network	Access to the surroundings -This should be linked to communication/transport network	Access to the surroundings -This should be linked to communication/transport network
	Disabled people accessibility (wheelchair)	Disabled people accessibility (wheelchair)	Disabled people accessibility (wheelchair)
	Disabled people accessibility (visually)	Disabled people accessibility (visually)	Disabled people accessibility (visually)
	Disabled people accessibility (hearing impaired)	Disabled people accessibility (hearing impaired)	Disabled people accessibility (hearing impaired)

	Direct public transportation services	Direct public transportation services	Direct public transportation services
	Isolated area (Yes/not)	Isolated area (Yes/not)	Isolated area (Yes/not)
	Natural barriers (in the surroundings)	Natural barriers (in the surroundings)	Natural barriers (in the surroundings)
	Geo-Morphology characterization (Soil configuration and slope)	Geo-Morphology characterization (Soil configuration and slope)	Geo-Morphology characterization (Soil configuration and slope)
	CNH asset Boundaries (legal boundaries as i.e. property of land)	CNH asset Boundaries (legal boundaries as i.e. property of land)	CNH asset Boundaries (legal boundaries as i.e. property of land)
	CNH asset Buffer zone	CNH asset Buffer zone	CNH asset Buffer zone
	Hydrological classification information	Hydrological classification information	Hydrological classification information
	Geology classification	Geology classification	Geology classification
	Soil type	Soil type	Soil type
	Soil Degradation mechanism	Soil Degradation mechanism	Soil Degradation mechanism
	Distance of tree from building and tree species		Park with gateways
			Presence of orientation signs
			Presence of a range of languages in signs
			Presence of crossed by public roads
			Presence of well-mapped and clearly marked pathways
			Random path-making policy
			Presence of hiking paths
			Presence of bicycle routes
			Presence of walking trails
			Presence of picnic ground areas

			Presence of campgrounds areas
			Surroundings communities
			Biodiversity in the HA Select below <ul style="list-style-type: none"> • Main variety identification • Vegetation types Native of the area • Other Vegetation type • average of species types • Rare species • century-old trees • fire-adapted and fire-dependent vegetation • Trunk diameter of the top five most common species • Animals species type with huge numbers • Animals species with low numbers • Rare species • Presence of Erosion areas • ancient wooded area

Local and Traditional Knowledge

LOCAL AND TRADITIONAL KNOWLEDGE	Hazards local knowledge	Hazards local knowledge	Hazards local knowledge
	Construction techniques and materials traditional knowledge	Construction techniques and materials traditional knowledge	Construction techniques and materials traditional knowledge
	Resilient behaviours	Resilient behaviours	Resilient behaviours
	vernacular architecture and local traditions	vernacular architecture and local traditions	vernacular architecture and local traditions
	Cultural significance	Cultural significance	Cultural significance
	Multicultural belongings and collective memories	Multicultural belongings and collective memories	Multicultural belongings and collective memories
	Sense of Place	Sense of Place	Sense of Place

Cultural, Historical, Anthropological And Social Context /Intangible Heritage

CULTURAL, HISTORICAL, ANTHROPOLOGICAL AND SOCIAL CONTEXT /INTANGIBLE HERITAGE	Cultural significance to community and social resilience	Cultural significance to community and social resilience	Cultural significance to community and social resilience
	Overall Description Historical readings	Overall Description Historical readings	Overall Description Historical readings
	Main Historical references	Main Historical references	Main Historical references
	Linked Collective Memories and Traditions	Linked Collective Memories and Traditions	Linked Collective Memories and Traditions
	Intangible values	Intangible values	Intangible values
	Ethnic traditions	Ethnic traditions	Ethnic traditions
	Ethnographic information	Ethnographic information	Ethnographic information
	Architectonic Heritage	Industrial Heritage	Natural Heritage
		Urban Heritage	Landscape Perception

Governance

GOVERNANCE	Property Ownership (if applicable)	Property Ownership (if applicable)	Property Ownership (if applicable)
	Governance system	Governance system	Governance system
	Authorities. Define	Authorities. Define	Authorities. Define
	Management <ul style="list-style-type: none"> • Including Private • Private • Public 	Management <ul style="list-style-type: none"> • Including Private • Private • Public 	Management <ul style="list-style-type: none"> • Including Private • Private • Public
	Open to public: (Y/N)	Open to public: (Y/N)	Open to public: (Y/N)
	Governance Type <ul style="list-style-type: none"> • Hierarchical governance, • Participatory or collaborative governance, • Networking and/or multi-level governance, • Community led governance 	Governance Type <ul style="list-style-type: none"> • Hierarchical governance, • Participatory or collaborative governance, • Networking and/or multi-level governance, • Community led governance 	Governance Type <ul style="list-style-type: none"> • Hierarchical governance, • Participatory or collaborative governance, • Networking and/or multi-level governance, • Community led governance
		Design/Plan for future urban growth	Public agencies
		Regional policies	Wildlife Service
		Urban planning rules	Responsible for fire prevention and control
		Urban conservation plans	Municipal Council involvement
		Rehabilitation rules	National and regional governmental agencies
			NGOs
			Community Groups
			Local associations
			A watershed organization composed of representatives of stakeholders
			Organizations
			Control policies

Anthropic and Economic Context

ANTHROPIC AND ECONOMIC CONTEXT	CNH asset revenues	CNH asset revenues	CNH asset revenues
	CNH asset insurance costs	CNH asset insurance costs	CNH asset insurance costs
	Provide a description of CNH asset in its HA in term of economic situation	Provide a description of CNH asset in its HA in term of economic situation	Provide a description of CNH asset in its HA in term of economic situation
	GDP in the region	GDP in the region	GDP in the region
	CNH economic relevance in the region	CNH economic relevance in the region	CNH economic relevance in the region
	Tourism revenues	Tourism revenues	Tourism revenues
	Main economic sector in the region	Main economic sector in the region	Main economic sector in the region
	Main revenues type in the region	Main revenues type in the region	Main revenues type in the region
	CNH asset approximately yearly investment costs	CNH asset approximately yearly investment costs	CNH asset approximately yearly investment costs

Policies and Planning Context

POLICIES AND PLANNING CONTEXT	Spatial and Urban planning structure - Urban /regional Plans/strategies (overall planning but also specific to squares, sites etc	Spatial and Urban planning structure - Urban /regional Plans/strategies (overall planning but also specific to squares, sites etc	Spatial and Urban planning structure - Urban /regional Plans/strategies (overall planning but also specific to squares, sites etc
	Pre-disaster Recovery planning	Pre-disaster Recovery planning	Pre-Disaster Recovery planning

Links to Other CNH Catalogues and Inventories and Interoperability

LINKS TO OTHER CNH CATALOGUES	Existing National catalogues information. Indicate language and if the translation is available and Link	Existing National catalogues information. Indicate language and if the translation is available and Link	Existing National catalogues information. Indicate language and if the translation is available and Link
	Building inventory: Detailed historical survey	Local Inventories: Inventories for Conservation areas	Existing Inventories: Vegetarian species inventory

Table 5: Finalisation of attributes of Building, Urban, Natural Macrocategor

6.5 Table of Prioritization of Attributes according to the Shortlist of Indicators

NATURAL MACROCATEGORY

		PREVENTION	
NATURAL MACROCATEGORY ATTRIBUTES			CORRESPONDENCE IN INDICATORS
Defining the CNH asset and its significance	Denomination	(text)	
		Current Formal Name	
		Local Name	
		Name in other languages	
		Historical Name	
	Location	Country	
		City	
		Location	
		Coordinates (Latitude / Longitude in WGS84 (Pseudo / Mercator) Spatial reference system)	
		Cadastral Data	
		Land Use	
		Height above sea level (m)	
	Total Population (more detailed below in Data)	total population	PREVENTION/ADAPTION PHASE – Exposure – individuals – Demographic – Population in hazard area
	SHELTER Scale	District/Urban	

	Environmental context and regime (Together with the cell below)	Natural protected heritage Protected natural area* Historic Garden and plantings (vegetal architectures) Natural monument Cultural Landscape Geological monument Natura 2000 sites Geopark "Silence Areas" (in the Netherlands) Other Natural areas**	PREVENTION/ADAPTION PHASE Coping capacity o protection of natural resources § Urban characterization • Share of the protected lands • Share of ecological corridors § Risk reduction • Management of river basins and environmental protection • Updating and enforcement of safety standards and construction codes
--	--	--	--

	<p>NATURAL AREA TYPE Classification / Registration Status and Current Protection Status</p>	<p>Natural protected heritage § IUCN Protected Area*** o I a. Strict Nature Reserve o Ib. Wilderness Area o II. National Park o III. Natural Monument o IV . Habitat/ Species o V. Protected Landscape/ Seascape o VI. Protected Area with Sustainable Use of Natural Resources § Marine Protected Areas § World Heritage sites § Global Geoparks § Ramsar sites § Biosphere reserves Other Natural Areas / green spaces Conventional urban park, with lawns, flowerbeds, playgrounds and sports fields Garden linked to historic buildings River Basin Non protected Historic or traditional planting Designed Park/Garden (vegetal architecture) Natural area that includes designed park/garden Green Infrastructure Component of a green infrastructure into the built urban environment Permanence of historic land planning (e.g. centuriation, rural land parcelling, settlement location, roadtracks, water and channel networks) historic landscapes, anthropic landscapes zoos aquaria and botanical gardens natural habitat</p>	<p>PREVENTION/ADAPTION PHASE Coping capacity o protection of natural resources § Urban characterization • Share of the protected lands • Share of ecological corridors § Risk reduction • Management of river basins and environmental protection • Updating and enforcement of safety standards and construction codes</p> <p>PREVENTION/ADAPTION PHASE Coping capacity Protection of natural resources</p> <p>PREVENTION/ADAPTION PHASE Coping capacity Natural Capital</p>
--	---	--	---

		<p>marine ecosystems sanctuaries reservoirs</p>	
--	--	---	--

	<p>DEGREE OF NATURAL-NESS (from the most natural to the least)</p>	<p>10 Natural virgin system (only natural elements and processes are present) 9 Natural system (few exotic species are present) 8 Sub-natural system (there is possibly an extended presence of wild exotic species, but with low impact) 7 Quasi-natural system (extensive human activities, but with low physical impact) 6 Semi-natural system (human infrastructure is scarce or concentrated; wild exotic species are possibly dominant, with native species considerably reduced) 5 Cultural self-maintained system (processes are conditioned by extensive human activities, with native species altered and occasionally managed) 4 Cultural assisted system (there are important infrastructures and/or conditioning of the physical environment, with forced biological production and moderate addition of matter, usually with pollution added) 3 Highly intervened system (still includes areas with natural, cultivated, or breeding biological production, mixed in a mosaic with buildings and other infrastructure) 2 Semi-transformed system (biological production is not dominant; human elements predominate) 1 Transformed system (human processes govern, with clear dominance of artificial elements) 0 Artificial system (there is no self-maintained macroscopic life; microscopic life is absent or in containers)</p>	<p>PREVENTION/ADAPTION PHASE Coping capacity o protection of natural resources</p>
--	--	---	--

	Overall Description	Made of... wild areas, terracing, tree rows, forests, farming, canals, roads, built areas ...	
	Uses	Hunting areas Sanctuaries Natural/Loisir park facilities loisir infrastructures Farming Industrial activity within nearby	
	Detailed list of NATURAL components wild areas, terracing, tree rows, forests, farming, canals, roads, built areas	min 300 - max 500 words (fill in according to the indications)	
	NATURAL/URBAN area included in urban areas area including urban areas	Urban areas Within nearby buildings within	PREVENTION/ADAPTION PHASE Sensitivity Environmental sensitivity Urban characterization • Buildings in hazard area • Street pattern

		<p>Other Areas:</p> <p>Archaeological areas</p> <p>Architectural works</p> <p>Art works (e.g. land art, sculptures)</p> <p>Dam</p> <p>Geoparks</p> <p>Geological formation</p> <p>Historic structures or manufacts</p> <p>Infrastructures:</p> <p>road and rail</p> <p>waterways</p> <p>Industrial archaeology</p> <p>Memorial, Monument</p> <p>Permanence of historic land planning (e.g. centuriation, rural land parcelling, settlement location, roadtracks, water and channel networks)</p> <p>Reservoirs</p> <p>Resource extraction areas</p> <p>specific building techniques and materials</p> <p>Transmission towers.</p> <p>microwave transmission towers of radio and television stations, mobile telephone services and governmental agencies.</p> <p>Vernacular architecture</p>	<p>PREVENTION/ADAPTION PHASE</p> <p>Coping capacity</p> <p>Protection of natural resources</p> <p>PREVENTION/ADAPTION PHASE</p> <p>Adaptive capacity</p> <p>natural capital</p>
	Garden/Park designer		
	Natural area design and management works	<p>§</p> <p>§ Retaining</p> <p>§ Drainage</p> <p>§ Canals</p>	<p>Terracing walls works</p>
	Resource extraction		
	Reforestation works		
	System recovery		

	Reestablishment/restoration		
	Maintenance forest works		
	Category List UNESCO (Select from the table by clicking on arrow)	Cultural landscapes	
	TYPE (In the order Main and All Included Types)	Tangible Heritage (Movable)	
	Type specification	Museum	
		If Other, define:	
	Classification / Registration Status and Current Conservation Status	Listed in the UNESCO WHS: Ref no: Link	
		Listed in European Heritage Label Ref no: Link	
		Listed in the National List/Lists Replicable Field if Cross-Country Ref no link	
		Listed in Local List/Lists Replicable Field if Cross-Country Ref no: Link	
Listed in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity Ref no: Link			

	PROTECTED SITES AND URBAN HERITAGE WITHIN THE BOUNDARIES OF NATURAL AREA	Protected parks, gardens, monumental tree	<p>PREVENTION/ADAPTION PHASE – Coping Capacity – Protection of natural resources – ecological capacity:</p> <ul style="list-style-type: none"> • Vegetation density • Share of the protected lands • Share of ecological corridors • Structural connectivity of green infrastructure • Functional connectivity of green infrastructure • Area of habitats restored • Habitat functional composition (relative abundance of functional features) • Green space proportion • Vegetation water content • Habitat-suitability index under climate change scenarios
		Parks and green areas	
		Cemetery	
		Monuments, architectural heritage at building scale -> BUILDING MACROCATEGORY	
		Other heritage assets at urban scale -> URBAN MACROCATEGORY	

	Overall description of the CNH asset in the current situation with its main features and components that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)	min 300 - max 500 words (fill in according to the indications)	<p>Sensitivity -> building characteristics -> Urban characterization -></p> <ul style="list-style-type: none"> • Land Take • Land cover • Urban growth, avg. annual rate (%). • Average slope • Average elevation • Thermal diffusivity • Solar reflectance <p>Sensitivity -> environmental sensitivity -> Urban characterization -> Buildings in hazard area</p>
	Simple/Complex CH asset	<p>Simple site: Specify according to the UNESCO Thesaurus for descriptive terms [e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches]</p> <p>Complex Site: Specify in the cell below, indicate detailed list of CH components (see the cell below)</p>	
	Detailed list of CNH components in the case of composite CNH categorization (e.g. Cultural Routes)	List Components and related Types Specify according to the UNESCO Thesaurus for descriptive terms (e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches)	<p>PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity – building characterization</p> <p>PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity – urban characterization</p>

Main Historical Information			
	Characterizing Historical period		
	Timeline		
	Name of historical territorial area		
	Historical information <ul style="list-style-type: none"> • Ancient denomination • Earliest Urban Features • Roman site 		
	territorial environmental transformations		
	geological		
	archeological		
	land uses		
	parceling		
	material culture		
	designs and artworks		
	vernacular and local architecture		
	rural and peasant culture		
	canals and waterways		
	ancient wooded area		
	ways of use (productive or recreational)		
	ways and techniques of cultivation		
	ways of traditional maintenance		

	feasts, historic events, local cultural traditions		
	Garden/Park designer		
DATA (DIMENSIONS)	Total Surface of Natural areas hectare (Surface and ground water providing sources for surroundings urban areas, dumps or factories)		
	Green areas surface shaded area (relationship between total leaf area and trunk diameter) vegetation growth rate class		
	Water surface		
	Built areas Surface		
	Farming Surface		
	Inhabitants number		
	Road and rail surfaces		

	Demographics	<ul style="list-style-type: none"> • Total population • population in cities by sex and age • vulnerable groups • population density for neighborhood/interested urban area • urban growth trend 	<p>PREVENTION/ADAPTION PHASE – Exposure – individuals – Demographic – Population in hazard area</p> <p>PREVENTION/ADAPTION PHASE – Exposure – economic characteristics – unemployment rate</p> <p>PREVENTION/ADAPTION PHASE – Sensitivity – Social/demography characteristics:</p> <ul style="list-style-type: none"> • Population density • Percentage of population below 65 years of age • Percentage of population 17 years of age or younger • Percentage population without sensory, physical, or mental disability • Percentage of female • Percentage of one-person household • Net international migration
	Climate TYPE		

CLIMATE CHARACTERIZATION	Ecosystems	Type		PREVENTION / ADAPTION PHASE Source/hazards Magnitude § Flood Characterization • Flood depth • Water velocity (in the flooded area) • Combinations of flood depth and water velocity in the flood area • Flood frequency: linked with the return period § Soil characterization • Surface runoff § temperature characterization • Annual Mean Temperature • Mean Diurnal Range (Mean of monthly (max temp - min temp)) • Isothermality (P2/P7) (*100) • Temperature Seasonality (standard deviation *100) • Max Temperature of Warmest Month • Min Temperature of Coldest Month • Temperature Annual Range (P5-P6) • Mean Temperature of
	Mediterranean			
	Polar			
	Mountain	zone		
	Tundra			
	Temperate	Forest		
	Grasslands			
	Tropical	Rainforest		
	Desert			
	Marine			
	Freshwater			
	drought and high temperatures events			
	storm wind			
	invasive species			
	Deforestation works			
	resource extraction damages mining, illegal logging			
	oil spills			
	poaching			
	agricultural encroachment			
	threats induced by armed conflict and war,			
	earthquakes			
	inappropriate development			
	Erosion areas			

	<p>property faced with danger: decline in the population of the endangered species Severe deterioration of the natural beauty or scientific value of the property Human encroachment on boundaries or in upstream areas planned resettlement or development projects</p>		<p>Wettest Quarter</p> <ul style="list-style-type: none"> • Mean Temperature of Driest Quarter • Mean Temperature of Warmest Quarter • Mean Temperature of Coldest Quarter • Daily mean temperature • Thermal shock [Tmax-Tmin] <p>§ hygrometric conditions</p> <ul style="list-style-type: none"> • Mean relative humidity • Daily humidity cycle shocks [RH(n)-RH(n+1)>25%] • Relative humidity concentration [nRH>75%] <p>§ Rainfall characterization</p> <ul style="list-style-type: none"> • Daily maximum precipitation corresponding to the return period T • Hourly maximum precipitation for a return period (relevant for pluvial flood) • Annual Precipitation • Precipitation of Wettest Month • Precipitation of Driest Month • Precipitation Seasonality (Coefficient of Variation) • Precipitation of Wettest Quarter • Precipitation of Driest Quarter
--	--	--	--

			<ul style="list-style-type: none"> • Precipitation of Warmest Quarter • Precipitation of Coldest Quarter
TOPOGRAPHY AND GEO-MORPHOLOGICAL CHARACTERISATION	Geomorphological Information		PREVENTION/ADAPTION PHASE Source/hazards Sensitivity Environmental sensitivity § land characterization <ul style="list-style-type: none"> • land take • average ground slope • land cover • Height above sea level
	Topographical information Including Lakes Rivers Mountains Seacoasts Canyon Dam Scenic Scenic waterfall	Cliffs	PREVENTION/ADAPTION PHASE Source/hazards Sensitivity Environmental sensitivity § land characterization <ul style="list-style-type: none"> • land take • average ground slope • land cover • Height above sea level

	Soil Types		<p>PREVENTION/ADAPTION PHASE</p> <p>Source/hazards</p> <p>Sensitivity</p> <p>Environmental sensitivity</p> <p>§ Soil</p> <ul style="list-style-type: none"> • Soil stability • Soil water content <p>§ Soil characterization</p> <ul style="list-style-type: none"> • Relative water content in the top few centimetres of soil (usually up to 5 or 7 cm) • Soil stability index • Soil water content
	Land Uses		<p>PREVENTION/ADAPTION PHASE</p> <p>Source/hazards</p> <p>Sensitivity</p> <p>Environmental sensitivity</p> <p>§ land characterization</p> <ul style="list-style-type: none"> • land take • average ground slope • land cover • Height above sea level
	Topographical characterisation		<p>source/hazards -> magnitude -> Urban characterization -> Subsidence rate</p>
	Geo-Morphology characterisation		<p>PREVENTION/ADAPTION PHASE</p> <p>Source/hazards</p> <p>Sensitivity</p>

			Environmental sensitivity & land characterization
	Coastal city/area		PREVENTION/ADAPTION PHASE Source/hazards Sensitivity Environmental sensitivity & land characterization
	Mountain city/area		PREVENTION/ADAPTION PHASE Source/hazards Sensitivity Environmental sensitivity & land characterization
	River city/area		PREVENTION/ADAPTION PHASE Source/hazards Sensitivity Environmental sensitivity & land characterization
	Forest Nearby		PREVENTION/ADAPTION PHASE – Sensitivity – en- vironmental sensitivity - land characterization: slope
	Slope		PREVENTION/ADAPTION PHASE – Sensitivity – en- vironmental sensitivity - land characterization: slope

	Morphology derived by Regrading of slopes		
	Soil type		PREVENTION/ADAPTION PHASE – Sensitivity – en- vironmental sensitivity - soil characterization
	Soil infiltration capacity (permeable surface)		PREVENTION/ADAPTION PHASE – Sensitivity – en- vironmental sensitivity - soil characterization
GOVERNANCE	Ownership:		
	Governance system:		
	Authorities:		
	Management Public/Pri- vate		
	Open to public: (Y/N):		
	Pre-Disaster Recovery Planning		
	Public agencies		
	Landowners		PREVENTION / ADAPTION Adaptive capacity o social capital/learning § Infrastructure • Psychosocial support fa- cilities per 10,000 persons § Social capital • Civic organizations per 10,000 persons • Red cross volunteers per 10,000 persons
	Wildlife Service		
	Responsibles for fire prevention and control		
	Municipal Council in- volvement		
	National and regional governmental agencies		
	NGOs		
	Community Groups		
	Local associations		

	A watershed organization composed of representatives of stakeholders		<ul style="list-style-type: none"> • Budget of volunteer organizations • # of registered volunteers
	Organizations		<p>PREVENTION / ADAPTION PHASE</p> <p>Adaptive capacity</p> <ul style="list-style-type: none"> o education § Percentage of people with disasters preparedness education o human capital/education § Number of participants in training courses executed by authorities, institution, corporations or other bodies, specific for DRM
	Control policies		

	Local/regional/policies for Heritage conservation areas		<p>PREVENTION/ADAPTION PHASE – Adaptive Capacity – institutional capital/governance – institutional: The extension to which risk is taken into account in land use and urban planning</p> <p>PREVENTION/ADAPTION PHASE – Adaptive Capacity – economic capital – activities: Percentage of firms implementing international risk management standards in the organisation structure and processes</p> <p>PREVENTION/ADAPTION PHASE – Coping Capacity – Awareness/information: – education: Number of participants in training courses executed by authorities, institution, corporations or other bodies, specific for DRM</p>
--	---	--	--

	Local/regional/policies and measures for DDR		PREVENTION/ADAPTION PHASE – Adaptive Capacity – institutional capital/gov-ernance – institutional: Mechanisms for com-munities to engage with government
	National/local policies linking culture, natural development and DRR		PREVENTION/ADAPTION PHASE – Adaptive Capacity – institutional capital/gov-ernance – institutional: Mechanisms for com-munities to engage with government
	Measures facilitating communication and co-operation between the stakeholders, in partic-ular between the public institutions; and be-tween the public and private stakeholders for DDR in Natural Area		PREVENTION/ADAPTION PHASE – Adaptive Capacity – human capital – educa-tion: Percentage of peo-ple with disasters pre-paredness education PREVENTION/ADAPTION PHASE – Adaptive Capacity – human capital – training: Number of profession-als trained in post-dis-aster recovery and preservation of cultural heritage

	Measures to promote capacity-building activities involving main stakeholders in Heritage and DDR		PREVENTION/ADAPTION PHASE – Coping Capacity – living with uncertainty/improvising – communication - Existence of a platform for information sharing and networking using tools and routines and number of unique users
	Measures aimed at mitigating the impacts of climate change on Natural HA		
	Policies and initiatives integrating natural HA and the natural environment		
	Legislative and regulatory measures to safeguard intangible values of natural heritage		
	Measures Promoting intercultural dialogue		

	Measures and Initiatives promoting cultural diversity in HA		<p>PREVENTION/ADAPTION PHASE – Adaptive Capacity- social capital/learning – social capital:</p> <ul style="list-style-type: none"> ● Civic organizations per 10,000 persons ● Red cross volunteers per 10,000 persons ● Budget of volunteer organizations ● Number of registered volunteers
	Measures and Initiatives promoting processes and participation, keeping active and facilitating dialogue (in planning, heritage identification and awareness)		<p>PREVENTION/ADAPTION PHASE – Coping Capacity – Protection of natural resources – risk reduction:</p> <p>Environmental impact assessment of heritage sites</p>
	Measures in place to include of heritage in impact assessments		<p>PREVENTION/ADAPTION PHASE – Exposure - object/buildings/infrastructure – asset characterization: sky view factor</p>

	Measures supporting innovative income rooted in heritage and local tradition		PREVENTION/ADAPTION PHASE – Transformative Capacity- social memory – local knowledge – Existence of mechanisms for integration local knowledge and local perceptions of risk and scientific knowledge, data and assessment methods
	Public policies in place to learn from the traditions and perceptions of local communities		
	Measures in place for tourism services in natural HA		
	Measures in place for fostering understanding of heritage vulnerability		PREVENTION/ADAPTION PHASE – Coping Capacity – Awareness/information – education: Number of professionals trained in post-disaster recovery and preservation of cultural heritage
	Measures in place supporting capacity building efforts (educational programmes for professionals on natural heritage, ...)		

	Measures for improving Information and Digital Technologies in Heritage and DDR		PREVENTION/ADAPTION PHASE – Adaptive Capacity- social capital/learning – social capital: ● Budget of volunteer organizations ● Number of registered volunteers
	Measures for developing a specific communication strategy toward the civil society (outreach and information sharing through social media)		
	Mechanisms in place to assess the vulnerability of attributes of natural HA to disasters		
	Mechanisms in place to assess the vulnerability of attributes of natural HA to climate change.		
	Mechanisms in place to assess the vulnerability of Heritage attributes of natural HA to socio-economic pressures		
	Mechanisms in place to assess the existing local skills		
	Mechanisms in place to assess the human resources of natural HA		

	Mechanisms in place to assess cultural resources in natural HA		
Defining RISKS	Hazard Type According to SHELTER Indicators shortlist	Earthquake	source/hazards -> frequency -> Flood Hazard source/hazards -> frequency -> Hazard Characterization
		Definition:	
	Hazard Exposures and Threats (threatening effects of climatic, geological or other environmental factors)	individuals	
		invasive species Deforestation works resource extraction damages mining, illegal logging oil spills poaching agricultural encroachment threats induced by armed conflict and war, earthquakes inappropriate development Erosion areas	PREVENTION / ADAPTION Exposure § hazard area characterization • Land take in hazard characterization • Buildings in hazard area • Critical facilities in hazard area
	property faced with danger	decline in the population of the endangered species Severe deterioration of the natural beauty or scientific value of the property Human encroachment on boundaries or in upstream areas planned resettlement or development projects	RECOVERY Damages Damages in ecosystem
	Vulnerability	Sensitivity	

		Definition:	
	Vulnerable areas for location	Definition:	PREVENTION/ADAPTION PHASE – Adaptive Capacity – natural capital – ecological capacity: <ul style="list-style-type: none"> • Area under vegetation and wetlands • Total carbon sequestered (Mg C) and carbon sequestration rate (Mg C/ha/yr) p
	Monitoring Time	Vulnerable areas for location <ul style="list-style-type: none"> • Proximity to water basins, from sea/river; • Proximity to forest/ • Tree/Tree lines nearby 	
ACCESSIBILITY	Access by gateways		
	Presence of park boundaries/transected areas		
	Disabled people accessibility wheelchair access visually hearing impaired		
	Direct public transportation services		
	Presence of orientation signs		

	A range of languages in signs and publications		
	Reach out to diverse ethnic group approach		
	Areas zoned (for intensive use, for quieter use, for a more remote experience and as wilderness zones)		
	Crossed by public roads		
	well-mapped and clearly marked pathways walking trails hiking paths bicycle routes random path-making policy		
	picnic ground areas		
	campgrounds areas		
	hosting events festivals fairs		
	Erosion areas		
	Connectivity with other natural areas		
	energy-efficient facilities water use efficiency at its facilities		
BIODIVERSITY	VEGETATION TYPES PLANT SPECIES	number of varieties. (biodiversity itself enhances resilience of ecosystems)	PREVENTION/ADAPTION PHASE

		Main variety identification	Source/hazards Sensitivity No sub category • Structural connectivity of green infrastructure • Functional connectivity of green infrastructure • Number of non-native species of flora introduced (total number)
		Native of the area Yes/not	
		Rare species	
		Fire-adapted and fire-dependent vegetation	
		Century-old trees	
		Exceptionally large trees species	
		Average of species types drought deciduous species evergreen trees monoculture	
		Trunk diameter of the top five most common species or genera	
		Flowers	
		Turfs	
		Turfgrass	
		Vegetation species inventory	
		Animals species type with huge numbers	Number of native bird species within a defined urban area
		Animals species with low numbers	Number of native bird species within a defined urban area
		Number of variety	
		Rare species	
		Native of the area Yes/not	
CULTURAL, ANTHROPOLOGICAL AND SOCIAL CONTEXT (INTANGIBLE HERITAGE)	linkable Writers works		
			PREVENTION/ADAPTION PHASE Coping capacity • transformative capacity/inherent resilience § Social memory

	linkable Artwork		PREVENTION/ADAPTION PHASE Coping capacity • transformative capacity/inherent resilience § Social memory
	linkable Explorers		PREVENTION/ADAPTION PHASE Coping capacity • transformative capacity/inherent resilience § Social memory
	linkable exploration events		PREVENTION/ADAPTION PHASE • transformative capacity/inherent resilience § Social memory § Living with uncertainty/improvising § Self-organisation, reflective and shared learning
	linkable religious beliefs		PREVENTION/ADAPTION PHASE • transformative capacity/inherent resilience § Social memory § Living with uncertainty/improvising § Self-organisation, reflective and shared learning
	linkable traditions		PREVENTION/ADAPTION PHASE • transformative capacity/inherent resilience § Social memory

			§ Living with uncertainty/improvising § Self-organisation, reflective and shared learning
	linkable scientific discovery		PREVENTION/ADAPTION PHASE • transformative capacity/inherent resilience § Social memory § Living with uncertainty/improvising § Self-organisation, reflective and shared learning
	Anthropological and ethnographic information Ways of lives and work		PREVENTION/ADAPTION PHASE Coping capacity • transformative capacity/inherent resilience § Social memory
	specific techniques and materials	for natural areas management for terracing for farming for hunting for materials for farming for fire protection	
	Indigenous communities Villages Park gateway Communities (Numbers) Surrounding Communities Visitors (Numbers a		PREVENTION/ADAPTION PHASE Coping capacity • networks/solidarity/Community preparedness § Public information and community participation

	year) Settlements		<ul style="list-style-type: none"> transformative capacity/inherent resilience § Social memory
	Historical readings		
	Historical references		
	Periodic Cultural event		
	Traditions		
	Collective Memory		PREVENTION/ADAPTION PHASE Coping capacity <ul style="list-style-type: none"> transformative capacity/inherent resilience § Social memory
	Local Knowledge information		PREVENTION/ADAPTION PHASE Coping capacity <ul style="list-style-type: none"> transformative capacity/inherent resilience § Social memory
	Intangible Heritage Balance of cultural and natural values in the natural environment		PREVENTION/ADAPTION PHASE Coping capacity <ul style="list-style-type: none"> transformative capacity/inherent resilience § Social memory
	Ethnic traditions		PREVENTION/ADAPTION PHASE Coping capacity

			<ul style="list-style-type: none"> • transformative capacity/inherent resilience § Social memory
	Ethnographic information		PREVENTION/ADAPTION PHASE Coping capacity <ul style="list-style-type: none"> • transformative capacity/inherent resilience § Social memory
PAST EVENTS	wildfires scale, frequency and intensity of wildfires		PREVENTION / ADAPTION PHASE Source/hazards Frequency § Flood hazard <ul style="list-style-type: none"> • Flood area corresponding to the return period T • Flood frequency: linked with the return period § Hazard characterization <ul style="list-style-type: none"> • Frequency of disaster event § Storm characterization <ul style="list-style-type: none"> • Number of storms per month
	period (spring fires cause different and more severe changes in many biological processes)		
	hectares burned		
	loss of human life		
	storms/storm wind		
	specific techniques and materials for natural areas management for terracing for farming for hunting for materials for farming for fire protection		

POLICIES AND PLANNING	Ecosystem management plan		
	Management of water resources		
	Integrated watershed management		
	Nearby park fire-prone areas		
	Wildland hazard building codes buffer zones between the park and urbanized areas		
	Monitors sounds in parks		
	River systems and floodplains, riparian systems, regional greenspace systems, greening major transportation corridors		
	'prescribed fire' (intentional burning to reduce fuel in the potential paths of destructive wildfires or to maintain natural processes)		
	territorial planning structure - territorial /regional Plans/strategies (overall but also specific to natural areas)		adaptive capacity -> built capital/infrastructure -> Infrastructure -> Hospital beds per 10,000 persons adaptive capacity -> built capital/infrastructure -> Sub-category (non) ->

			Percentage of existing infrastructures provided with back-up systems adaptive capacity -> natural capital
ECONOMIC CONTEXT	Fee for entry (park)		PREVENTION / ADAPTION PHASE Adaptive capacity o economic capital § activities • Percentage of firms implementing international risk management standards in the organisation structure and processes § Economic • Economic Resilience Index adapted based on Disaster Deficit Index o institutional capital/governance § institutional • Percentage population covered by a mitigation plan § Economic • Budget allocation and mobilization PREVENTION / ADAPTION PHASE
	Number of visitors attracting (also for nearby areas income)		
	Number of local visitors		
	Engaged workers		
	Income from farming		
	CH asset revenues in Euros		
	CH asset insurance costs		
	Provide a description of CH asset in its HA in term of economic situation		
	Income per capita		
	GDP in the region		
	Economic Resilience Index		
	Tourism revenues in the HA		
	Main economic sector		

			Sensitivity o economic characteristics § Per capita income § Percentage of population above poverty line § Unemployment rate § Gini coefficient § Ratio of large to small businesses
MONITORING AND ASSESSING	Specific Rules and Law restrictions		
	Control of urban sewage, runoff and solid waste		
	Environmental education programs		
	Compliance signs		
	Stern warnings (to stop people setting fires)		
	fire roads		
	Preventing littering that harms or kills wildlife		
	Controlling poaching		
	Control encroachment		
	Waste system		
	managing water quality and quantity (to protect biodiversity from pollution and extremes of drought and flooding) Guideline 15)		
	Vegetation Management		

	Managing wildfires i(n ways that protect native species and eco-systems) (Guideline 16);		
	Fire-safe landscaping		
	Nearby fire-prone areas		
	Watershed (also called a catchment area or drainage basin)		
	Pollution monitoring		
	Controllers		
	Direct link with responsible for fire prevention and control in site in neighbouring urban areas		
	Wifi Telephone Shelter		
	predictive modelling spatially explicit		
	assess land use change		
	Landslide management By re-grading of slopes;		
	connections among heritage sites		
	conservation priorities		
	Cooperation among institutions that have		

	complementary missions		
	Cooperation of heritage sites with universities		
	Take advantage of volunteers and support groups		
	Local sense of ownership		
	Control encroachment		
	Monitor and manage water		
	Promote connections to natural areas		
	Promote rules and organizational culture		
	Take advantage of international organizations and exchanges		
	Promote and defend and expand urban heritage		
	Improve urban heritage through research and evaluation		
	Prevent and prosecute crime against people and property		
	Demonstrate, facilitate and promote public health and well-being		
	Demonstrate, facilitate and promote good environmental behaviour		

TOOLS	website information		
	App for mobile devices		
	GIS data based		
	print publications		
	social media		
	multimedia presentations		
	pollution monitoring systems		
	sensors		
RESOURCES			
HUMAN RE-SOURCES			

Table 6: Prioritization of Attributes according to the Shortlist of Indicators for NATURAL Macrocategory

URBAN MACROCATEGORY

	PREVENTION		
URBAN MACROCATEGORY ATTRIBUTES			CORRESPONDENCE IN INDICATORS
		(text)	
	Denomination	Current Formal Name	
		Local Name	

Defining the CH asset and its significance	Location	Name in other languages	
		Historical Name	
		Country	
		City	
		Location	
		Coordinates (Latitude / Longitude in WGS84 (Pseudo / Mercator) Spatial reference system)	
	Demographics	Height above sea level (m)	
		<ul style="list-style-type: none"> Total population population in cities by sex and age vulnerable groups population density for neighborhood/interested urban area urban growth trend 	<p>PREVENTION/ADAPTION PHASE – Exposure – individuals – Demographic – Population in hazard area</p> <p>PREVENTION/ADAPTION PHASE – Exposure – economic characteristics – unemployment rate</p> <p>PREVENTION/ADAPTION PHASE – Sensitivity – Social/demography characteristics:</p> <ul style="list-style-type: none"> Population density Percentage of population below 65 years of age Percentage of population 17 years of age or younger Percentage population without sensory, physical, or mental disability Percentage of female Percentage of one-person household

			<ul style="list-style-type: none"> • Net international migration
	Site plan /map	Add a plan of CH asset in its Historic Area	
	Governance	Ownership:	
		Governance type:	
		Authorities:	
		Management Public/Private	
		Open to public: (Y/N):	
	Scale	District/Urban	

	Human Size:	Settlements	Human Settlements Size: Megapolis or mega-region: a large urban region that is highly connected and counts more than ten million people Megacity: an urban agglomeration of 10 million people or more Urban agglomeration or conurbation: a central city with neighbouring cities linked to it Metropolis: an important city and the densely populated surrounding areas that are socially and economically integrated with it Micropolis: a growing smaller city City: a large populated urban agglomeration Town: a compactly settled area Village or commune: a rural community a borgo (Italian), Hamlet: a small settlement Isolated dwelling	PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity – urban characterization
	HUMAN SIZE PRIORITIZATION	SETT.	<ul style="list-style-type: none"> • Urban conurbation • Metropolis • City • Town • Village • Isolated dwelling 	PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity – urban characterization

	<p>DEGREE OF URBANIZATION</p> <p>To be checked with TEC to understand which prioritization is more effective</p>	<ul style="list-style-type: none"> • Urban centre (or high density cluster): Consists of contiguous grid cells with a density of at least 1,500 inhabitants per km². An urban centre has population of at least 50,000. • Urban cluster (or moderate density clusters): Town, Suburban. Consists of contiguous grid cells with a density of at least 300 inhabitants per km² and has a population of at least 5,000 in the cluster • Rural grid cells (mostly low density cells) : Village, Dispersed Rural Areas 	<p>PREVENTION/ADAPTION PHASE – Sensitivity – Building Characteristics – urban characteristics:</p> <p>Street Pattern</p>
		<ul style="list-style-type: none"> • Very strongly urbanized, with an address density of 2,500 addresses or more per km²; • Strongly urbanized, with an address density of 1,500 to 2,500 addresses per km²; • Moderately urbanized, with an address density of 1,000 to 1,500 addresses per km²; • Weakly urbanized, with an address density of 500 to 1,000 addresses per km² • Not urbanized, with an address density of less than 500 addresses per km² 	

	URBAN HA SCALE	Historic city Historic Town Historic Villages District Urban ensemble Urban Archaeological areas Urban area included in Protected area City/ Town/Village in Cultural routes City/ Town/Village in Cultural routes Village/Hamlet/Isolated dwelling in Cultural landscape Hamlet/Isolated dwelling in Geopark	PREVENTION/ADAPTION PHASE – Exposure - object/buildings/infrastructure – building characterization
	Category List UNESCO (Select from the table by clicking on arrow)	Cultural landscapes	
	TYPE (In the order Main and All Included Types)	Tangible Heritage (Movable)	
	Type specification	Museum	
		If Other, define:	
	Classification / Registration Status and Current Conservation Status	Listed in the UNESCO WHS: Ref no: Link	
		Listed in European Heritage Label Ref no: Link	
		Listed in the National List/Lists Replicable Field if Cross-Country	

		Ref no link	
		Listed in Local List/Lists Replicable Field if Cross-Country Ref no: Link	
		Listed in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity Ref no: Link	
	PROTECTED SITES AND URBAN HERITAGE	Monumental heritage of exceptional cultural value (registered urban area in world/ na- tional /local lists) • Conservation area • World Cultural Heritage site • European label site • Historical urban landscapes HUL • Archaeological site • Historic industrial heritage site • Architectural ensemble/site • Historic site (e.g. City walls and defensive towers, Citadel, Military) • Ethnic/Ethnographic/Anthropological site • Historic infrastructure • Memorial and Monument • Urban Art (e.g. Statues, artistic installa- tions)	PREVENTION/ADAPTION PHASE – Exposure - object/buildings/infra- structure – building charac- terization
		Monuments, architectural heritage at build- ing scale -> BUILDING MACROCATEGORY	PREVENTION/ADAPTION PHASE – Exposure - object/buildings/infra- structure – building characteriza- tion: • Daily hillside of roofs • Daily hillside of façades • Vibrations generated on

			cultural heritage by vehicular traffic
		Monumental open spaces (also defined by the built fronts): <ul style="list-style-type: none"> • Historic/designed square • Historic street (with Porticos, with continuous street-front • Historic court/ Cloister • Religious heritage site 	PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity - natural heritage characterization
		Parks, gardens, monumental tree -> NATURAL MACROCATEGORY	PREVENTION/ADAPTION PHASE – Coping Capacity – Protection of natural resources – ecological capacity: <ul style="list-style-type: none"> • Vegetation density • Share of the protected lands • Share of ecological corridors • Structural connectivity of green infrastructure • Functional connectivity of green infrastructure • Area of habitats restored • Habitat functional composition (relative abundance of functional features) • Green space proportion • Vegetation water content • Habitat-suitability index under climate change scenarios

		Other urban elements important for cultural identities and collective memories <ul style="list-style-type: none"> • Continuous regular architectural ensemble • Historic urban fabric • regeneration area • Social Housing/Working class district (architectural work) • Cistern • Seafront /Riverfront /Lake shore front 	
		Other at building scale -> BUILDING MACROCATEGORY	PREVENTION/ADAPTION PHASE – Exposure - object/buildings/infrastructure – building characterization
		Other open spaces important for cultural identities and collective memories: <ul style="list-style-type: none"> • Continuous regular architectural street-front • Square/Market square/Suk • Courtyard • Thermal bath • Mall 	
		New urban elements to be considered: <ul style="list-style-type: none"> • The urban built form (e.g. Compact fabric, urban sprawl, suburban sprawl) • Urban infrastructures: material networks and equipments • Infrastructures (e.g. Airport, Harbor, Railway, bridges, walkway, quayside, embankment, Main road) • Leisure area/parks • Industrial park 	
		Parks and green areas -> NATURAL MACROCATEGORY	
		Cemetery -> NATURAL MACROCATEGORY	

	Overall description of the CH asset in the current situation with its main features and components that will allow to directly link to specific analyses and detailed information in the Clusters of Ressources)	min 300 - max 500 words (fill in according to the indications)	Sensitivity -> building characteristics -> Urban characterization -> <ul style="list-style-type: none"> • Land Take • Land cover • Urban growth, avg. annual rate (%). • Average slope • Average elevation • Thermal diffusivity • Solar reflectance Sensitivity -> environmental sensitivity -> Urban characterization -> Buildings in hazard area
	Simple/Complex CH asset	Simple site: Specify according to the UNESCO Thesaurus for descriptive terms [e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches]	
		Complex Site: Specify in the cell below, indicate detailed list of CH components (see the cell below)	
	Detailed list of CH components in the case of composite CH categorization (e.g. Cultural Routes)	List Components and related Types Specify according to the UNESCO Thesaurus for descriptive terms (e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches)	PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity – building characterization PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity – urban characterization
	Material and Techniques (an open description is good but it would be very useful if we ask also about a category of material, so	300 words max Overall description of the historical Materials and Techniques of CH asset in relation to its components Link to Related Ressources	

	we can use this parameters in the evaluations)		
	Restauration and Reinforcements	Latest Intervention Date and Type Link to Related Ressources UNIBO	
		Reinforced-concrete slab: Roof (yes/no), vault (yes/no), horizontal structures (yes/no)	
		Placcaggi armati in cls: muri (yes/no)	
		Pilastri in cls armati in murature/in elementi architettonici antichi (yes/no)	
		Chiodature armate con iniezioni Regeneration of walls with concrete injections (yes/no)	
		Tie bars (yes/no)	
		Concrete underpinning or plinth (yes/no)	
		Prestressed cables - walls or other elements (yes/no)	
		Micropile underpinning bracket (yes/no)	
		Roof/floor edge beam (yes/no)	
	Main Historical Information	Date/period of construction	
		Characterising Historical period	
		Timeline	
		Architects/Artists	
		Patronage	
		Archaeological excavations (repeatable field)	
		Name of historical territorial area	

		Historical information <ul style="list-style-type: none"> • Ancient denomination • Earliest Urban Features • Roman site 	
	HA LAND USE FUNCTIONS, CHARACTERISATION	Current function	
		Historical function (repeatable field)	
		Open to public (Y/N)	
		Used by Local citizen	
		Touristic use and system of admittance and management	
		Number of CH asset staff	
		Number of CH asset inhabitants	
		Conversion/regeneration area	
		Educational	
		Entertainment area	
		Excavation area	
		Industrial area/ex industrial area	PREVENTION/ADAPTION PHASE – Adaptive Capacity - built capital/infrastructure – infrastructure: Hospital beds per 10,000 persons
			PREVENTION/ADAPTION PHASE – Adaptive Capacity- social capital/learning – infrastructure: Psychosocial support facilities per 10,000 persons
		Medical facilities	PREVENTION/ADAPTION PHASE – Coping Capacity – Awareness/information – infrastructure: Infrastructure Redundancy

			PREVENTION/ADAPTION PHASE – Exposure – object/buildings/infrastructure – infrastructure: Road and traffic disturbance
		Infrastructure	
		Parking lots	
		Parks and recreation	PREVENTION/ADAPTION PHASE – Sensitivity – Building Characteristics – urban characteristics: Percentage of residential buildings
		Residential area	
		Shopping areas	
		Pedestrian Zones	
		Sports complex	PREVENTION/ADAPTION PHASE – Coping Capacity – Shelter capacity – infrastructure: Hotels/motels per 10,000 persons
		Tourist-leisure area	PREVENTION/ADAPTION PHASE – Exposure – Ecosystems – hazard area characterization – Productive areas in hazard area
		Production areas	
		Warehouses area	
	CNH significance to community in terms of social resilience	if significant	
	Inspection Information		

		Periodic inspections	
		Inspector(s)' institution/affiliation	
		Inspection Date:	
		Inspection timing (indicating the duration of the inspection)	
		Type of inspection* (Suggested value: regular Inspection, emergency condition assessment, rainy season inspection)	
		Inspection Management Public/Private and responsables	
		Accessibility on inspection Day (Suggested values: open access, guarded, closed)	
Defining its RISKS	Hazard Type According to SHELTER Indicators shortlist	Weather condition on inspection day (Suggested values: raining, no raining)	source/hazards -> frequency -> Flood Hazard source/hazards -> frequency -> Hazard Characterization
		Earthquake	
	Exposure Type	If More, Define:	
		individuals	
	Vulnerability	Glossary Definition	
		Sensitivity	

	Vulnerable areas for location	Glossary:	PREVENTION/ADAPTION PHASE – Adaptive Capacity – natural capital – ecological capacity: <ul style="list-style-type: none"> • Area under vegetation and wetlands • Total carbon sequestered (Mg C) and carbon sequestration rate (Mg C/ha/yr) p
	Monitoring Time	Vulnerable areas for location <ul style="list-style-type: none"> • Proximity to water basins, from sea/river; • Proximity to forest/ • Tree/Tree lines nearby 	
Defining the CNH asset in its context	Environmental Context Vulnerabilities (terminology to be updated with ontologies) (TEC)	Existing Monitoring Scheme	<p>exposure -> object/buildings/infrastructure -> Urban characterization -> Buildings in hazard area</p> <p>exposure -> object/buildings/infrastructure -> Urban characterization -> Critical facilities in hazard area</p> <p>exposure -> object/buildings/infrastructure -> Urban characterization -> Land take in hazard area</p>

		Overall description of prevalent situation according to Geological, hydrological, and meteorological information on the nature of the climate, soil, fault lines (if any), water table, surface water such as a river, etc.	source/hazards -> magnitude -> rainfall characterization -> Daily maximum precipitation corresponding to the return period T source/hazards -> duration -> Storm characterization -> Storm duration source/hazards -> duration -> Heatwave characterization -> Temperature above 35°C for more than 3 consecutive days source/hazards -> duration -> Heatwave characterization -> The daily maximum temperature of more than 5 consecutive days exceeds the average maximum temperature by 5°C, the normal period being 1961–1990
		Environmental Conditions references to geology and hidrology should be allocated under next section on Geography	PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity – land characterization

		Topographical information	<p>source/hazards -> magnitude -> heatwave characterization -></p> <ul style="list-style-type: none"> • ONRN indicators for heat-wave • Daily mean temperature • Thermal shock [Tmax-Tmin] • Daily sun hours • Mean relative humidity • Daily humidity cycle shocks [RH(n)-RH(n+1)>25%] • Relative humidity concentration [nRH>75%] <p>source/hazards -> Intenstiy, duration and frequency -> Rainfall characterization -> IDF (intensity duration frequency) curves</p>
		Meteorological and climatological conditions	<p>source/hazards -> magnitude -> Storm characterization -> Wind speed (Hurricane, violent storm, heavy storm, storm)</p> <p>source/hazards -> magnitude -> Storm characterization -> gust strength</p> <p>source/hazards -> magnitude -> Storm characterization -> wind pressure</p> <p>source/hazards -> magnitude -> Storm characterization -> Lifted index</p> <p>source/hazards -> magnitude -> Storm characterization -> Wind speed (meter /second)</p>

		Water quality: surface and groundwater	exposure -> Ecosystems -> Pollution -> Air quality
		air and noise quality	PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity - soil characterization
		soil quality	source/hazards -> magnitude -> evaluation of ecological niche -> Annual Mean Temperature source/hazards -> magnitude -> evaluation of ecological niche -> Annual Precipitation
		Hydrological general information: water cycle, networks	source/hazards -> magnitude -> Earthquake characterization -> Peak Ground Acceleration (PGA) source/hazards -> magnitude -> Earthquake characterization -> Level of Seismic Hazard source/hazards -> magnitude -> Earthquake characterization -> Earthquake intensity (Modified Mercalli scale)

		Geology general information	<p>sensitivity -> environmental sensitivity -> No subcategory -></p> <ul style="list-style-type: none"> • Structural connectivity of green infrastructure • Functional connectivity of green infrastructure • Number of non-native species of flora introduced (total number) • Number of non-native faunal species introduced (total number) • Species diversity within defined area per Shannon Diversity Index • Number of species within defined area per Shannon Evenness Index • Number of veteran trees per unit area (no./ha) • Quantity of dead wood per unit area (m3/ha) • Extent of habitat for native pollinator species (ha) • Proportion of natural areas within a defined urban zone (fraction or %) • Number of conservation priority species (no./ha) • Number of native/local provenance species (no./ha) • Number of native bird species within a defined urban area • Change in number of
--	--	-----------------------------	---

			<p>native species compared to a baseline number of species</p> <ul style="list-style-type: none"> • Area of habitats re-stored (ha) • Habitat functional composition (relative abundance of functional features) • Shannon Index: This indicator corresponds to the proportion of bare, turf grass, rough grassland and herbs, shrubs, trees and of built environment • Urban Green Space proportion. This indicator is defined as the simple ratio of the natural areas (An) per the total area (Ac). The objective is to determine if the NBS solution increases or maintains the proportion of areas supporting biodiversity in the city or neighbourhood • Plant/root decay rate
		Ecosystems services and biodiversity conditions	<p>source/hazards -> Intensity -> Storm characterization -> Heavy rain</p>

		Energy infrastructures with potential risk (energy centrals, nuclear centrals, trafos, etc.)	
		Degradation mechanisms	
		Flood defenses	
		Vegetation barriers separating built areas from the sea/water basins	
		Drainage systems	PREVENTION/ADAPTION PHASE – Sources/hazard – magnitude: temperature characterization
		Climate type	PREVENTION/ADAPTION PHASE – Sources/hazard – magnitude
		Dry days number for year	PREVENTION/ADAPTION PHASE – Sources/hazard – intensity: rain-fall characterization
	TOPOGRAPHY AND GEO-MORPHOLOGICAL CHARACTERISATION	Rain days number for year	
		Topographical characterisation	source/hazards -> magnitude -> Urban characterization -> Subsidence rate
		Geo-Morphology characterisation	
		Coastal city/area	
		Mountain city/area	
		River city/area	
		Forest Nearby	PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity -land characterization: slope

		Slope	PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity -land characterization: slope
		Morphology derived by Regrading of slopes	
		Public spaces, roads, and paths morphological skeleton and main orientation	PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity -land characterization: land take
		Plots-blocks morphology and parcel structure (e.g. Regular blocks/ grid iron streets / small rectilinear city block/ narrow lots and building setbacks/ prominent civic spaces)	PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity - soil characterization
		Soil type	PREVENTION/ADAPTION PHASE – Sensitivity – environmental sensitivity - soil characterization
		Soil infiltration capacity (permeable surface)	
	Geographical Context and Physical Asset	Erosion area/ coastal erosion	Sensitivity -> building characteristics -> Urban characterization -> <ul style="list-style-type: none"> • Land Take • Land cover • Urban growth, avg. annual rate (%). • Average slope • Average elevation • Thermal diffusivity • Solar reflectance
		Description of CH asset surroundings including Immediate neighborhood, village, district, infrastructures, natural asset	

		HA Urban area current land cover	<p>PREVENTION/ADAPTION PHASE – Sensitivity – Building Characteristics – urban characteristics: Average annual rate of change of the percentage urban</p> <p>PREVENTION/ADAPTION PHASE – Sensitivity – Building Characteristics – urban characteristics: Building alignment rate</p>
		<p>Urban density (the measure of the HA per area unit)</p> <ul style="list-style-type: none"> • population/city • population/blocks • Floor area on a parcel 	<p>PREVENTION/ADAPTION PHASE – Sensitivity – Building Characteristics – urban characteristics: Street pattern</p> <p>PREVENTION/ADAPTION PHASE – Sensitivity – Building Characteristics – urban characteristics: Average annual rate of change of the percentage urban</p>

		<p>Connectivity (street density and design.)</p> <ul style="list-style-type: none"> • High connectivity (finer grain systems with smaller blocks that allow frequent changes in • direction; distances tend to be shorter) • Low connectivity 	<p>sensitivity -> infrastructure characteristics -> communication -> Percent population with a telephone</p> <p>sensitivity -> infrastructure characteristics -> communication -> % Population with access to broadband internet service</p> <p>sensitivity -> infrastructure characteristics -> urban characterization -> Average percent perviousness</p> <p>sensitivity -> infrastructure characteristics -> urban characterization -> Dam capacity</p> <p>adaptive capacity -> social capital/learning -> Infrastructure -> Psychosocial support facilities per 10,000 persons</p> <p>adaptive capacity -> social capital/learning -> Social capital -> Red cross volunteers per 10,000 persons</p> <p>adaptive capacity -> social capital/learning -> Social capital -> # of registered volunteers</p>
		<p>Physical Infrastructures and networks in the surroundings (e.g. dam, tunnels) (Repeatable field)</p> <p>include here: transport network (roads, paths), water management and sanitation</p>	

		(drainage, sewage system), energy infra-structures (generation, transformation), energy networks (distribution)	
		Sidewalk Dimension	PREVENTION/ADAPTION PHASE – Exposure - object/buildings/infrastructure – hazard area characterization: <ul style="list-style-type: none"> • Land take in hazard area • Major accident risk factories in hazard area
		Land Use percentage <ul style="list-style-type: none"> • Residential • Commercial • Industrial • Infrastructural • Tourist-leisure • Park and blue/green areas • Area of green public spaces (ha)/inhabitant (or every 1,000 inhabitants) 	
		Number of CNH sites	
		Isolated area (Yes/not)	
		Natural barriers (in the surroundings)	
		CH asset Boundaries (legal boundaries as i.e. property of land?) or social boundaries?	
		CH asset Buffer zone- What would it be the buffers' s role here? For evaluation?	PREVENTION/ADAPTION PHASE – Sensitivity –infrastructure characteristics – transport/access

		Access to CH asset (attach a map and/or photos) This should be linked to communication/transport network	PREVENTION/ADAPTION PHASE – Sensitivity –infrastructure characteristics – transport/access
	Cultural, Anthropological and Social Context (Intangible Heritage)	Access to the area (attach a map and/or photos) This should be linked to communication/transport network	
		Historical readings	
		Historical references	
		Periodic Cultural event	
		Collective Memory and Traditions	
		HAZARD Past Events Levels of damage of past event	
		Local Knowledge information	PREVENTION/ADAPTION PHASE – Adaptive Capacity – cultural capital/identity – cultural capital: <ul style="list-style-type: none"> • Intangible cultural values • Presence of a traditional culture
		Intangible Heritage Balance of cultural and natural values in the urban environment	transformative capacity/inherent resilience -> <ul style="list-style-type: none"> o Social memory o Living with uncertainty/improvising o Self-organisation, reflective and shared learning o Resourcefulness/Efficiency/ o Collaboration/inclusive/diversity/intersectorality o Innovation

			<ul style="list-style-type: none"> o Robustness/Strength/appropriately connected o Coupled with Local Natural Capital
		Ethnic traditions	<p>PREVENTION/ADAPTION PHASE – Exposure – individuals – Demographic – Population in hazard area</p> <p>PREVENTION/ADAPTION PHASE – Exposure – economic characteristics – unemployment rate</p> <p>PREVENTION/ADAPTION PHASE – Sensitivity – Social/demography characteristics:</p> <ul style="list-style-type: none"> • Population density • Percentage of population below 65 years of age • Percentage of population 17 years of age or younger • Percentage population without sensory, physical, or mental disability • Percentage of female • Percentage of one-person household

			<ul style="list-style-type: none"> • Net international migration
		Ethnographic information	
	Economic context		
		CH asset revenues in Euros	
		CH asset insurance costs	PREVENTION/ADAPTION PHASE – Sensitivity – Economic characteristics – per capita income
		Provide a description of CH asset in its HA in term of economic situation	
		Income per capita	PREVENTION/ADAPTION PHASE – Adaptive Capacity – economic capital – economic: Economic Resilience Index adapted based on Disaster Deficit Index

		GDP in the region	
		Economic Resilience Index	sensitivity -> economic characteristics adaptive capacity -> cultural capital / identity
		CH economic relevance in the Historic area (Please indicate what "area" means here. Does it mean the CH within its legal boundaries or the region in which the CH is located?)	
		Tourism revenues in the HA (What does "area" means here?)	
		Main economic sector (related to the CH or in general in the "area"?)	
	Policies and Planning context	Main revenues type in the Historic area	
		CH asset approximately yearly investment costs	adaptive capacity -> institutional capital/governance
		Spatial and Urban planning structure - Urban /regional Plans/strategies (overall planning but also specific to squares, sites etc	adaptive capacity -> built capital/infrastructure -> Infrastructure -> Hospital beds per 10,000 persons adaptive capacity -> built capital/infrastructure -> Sub-category (non) -> Percentage of existing infrastructures provided with back-up systems adaptive capacity -> natural capital
		The physical planning (transport, infrastructure) of the area in which the property is located- The physical characteristics of the area in which the CH is located, has been already characterized above, under Geogra-	

		physical and Physical Context in terms of infrastructures and networks- have been already	
	GOVERNANCE	Pre-Disaster Recovery Planning	
		Ownership	
		Management	
		Plans for future urban growth	
		Local/regional/policies for Heritage conservation areas	<p>PREVENTION/ADAPTION PHASE – Adaptive Capacity – institutional capital/governance – institutional: The extension to which risk is taken into account in land use and urban planning</p> <p>PREVENTION/ADAPTION PHASE – Adaptive Capacity – economic capital – activities: Percentage of firms implementing international risk management standards in the organisation structure and processes</p> <p>PREVENTION/ADAPTION PHASE – Coping Capacity – Awareness/information: - education: Number of participants in training courses executed by authorities, institution, corporations or other bodies, specific for</p>

			DRM
		Local/regional/policies and measures for DDR	PREVENTION/ADAPTION PHASE – Adaptive Capacity – institutional capital/governance – institutional: Mechanisms for communities to engage with government
		National/local policies linking culture, urban development and DDR	PREVENTION/ADAPTION PHASE – Adaptive Capacity – institutional capital/governance – institutional: Mechanisms for communities to engage with government
		Measures facilitating communication and co-operation between the stakeholders, in particular between the public institutions; and between the public and private stakeholders for DDR in HA	PREVENTION/ADAPTION PHASE – Adaptive Capacity – human capital – education: Percentage of people with disasters preparedness education PREVENTION/ADAPTION PHASE – Adaptive Capacity – human capital – training: Number of professionals trained in post-disaster recovery and preservation of cultural heritage
		Measures to promote capacity-building activities involving main stakeholders in Heritage and DDR	PREVENTION/ADAPTION PHASE – Coping Capacity –living with uncertainty/improvising – communication - Existence of a platform for information sharing and networking using tools and routines and number of unique users

		Measures aimed at mitigating the impacts of climate change on urban HA	
		Policies and initiatives integrating urban HA and the natural environment	
		Legislative and regulatory measures to safeguard intangible values of urban heritage	
		Measures Promoting intercultural dialogue	
		Measures and Initiatives promoting cultural diversity in HA	PREVENTION/ADAPTION PHASE – Adaptive Capacity- social capital/learning – social capital: <ul style="list-style-type: none"> ● Civic organizations per 10,000 persons ● Red cross volunteers per 10,000 persons ● Budget of volunteer organizations ● Number of registered volunteers
		Measures and Initiatives promoting processes and participation, keeping active and facilitating dialogue (in planning, heritage identification and awareness)	PREVENTION/ADAPTION PHASE – Coping Capacity – Protection of natural resources – risk reduction: Environmental impact assessment of heritage sites
		Measures in place to include of heritage in impact assessments	PREVENTION/ADAPTION PHASE – Exposure - object/buildings/infrastructure – asset characterization: sky view factor
		Measures in place for monitoring of height controls in the historic urban fabric	PREVENTION/ADAPTION PHASE – Transformative Capacity- social memory – local knowledge - Existence of mechanisms for integration local knowledge and

			local perceptions of risk and scientific knowledge, data and assessment methods
		Measures supporting innovative income rooted in heritage and local tradition	PREVENTION/ADAPTION PHASE – Transformative Capacity- social memory – local knowledge - Existence of mechanisms for integration local knowledge and local perceptions of risk and scientific knowledge, data and assessment methods
		Public policies in place to learn from the traditions and perceptions of local communities	
		Measures in place for tourism services in urban HA	
		Measures in place for fostering understanding of heritage vulnerability	PREVENTION/ADAPTION PHASE – Coping Capacity – Awareness/information – education: Number of professionals trained in post-disaster recovery and preservation of cultural heritage
		Measures in place supporting capacity building efforts (educational programmes for professionals on urban heritage, ...)	
		Measures for improving Information and Digital Technologies in Heritage and DDR	PREVENTION/ADAPTION PHASE – Adaptive Capacity- social capital/learning – social capital: • Budget of volunteer organizations • Number of registered volunteers

		Measures for developing a specific communication strategy toward the civil society (outreach and information sharing through social media)	
		Mechanisms in place to assess the vulnerability of attributes of urban HA to disasters	
		Mechanisms in place to assess the vulnerability of attributes of urban HA to climate change.	
		Mechanisms in place to assess the vulnerability of Heritage attributes of urban HA to socio-economic pressures	
		Mechanisms in place to assess the existing local skills	
		Mechanisms in place to assess the human resources of urban HA	
		Mechanisms in place to assess natural resources in urban HA	
		Mechanisms in place to assess cultural resources in urban HA	

	CNH LOSS ASSESSMENT CATEGORIES	<p>Critical Loss Site destroyed: all or most of the visible key elements of the assessed site have collapsed (80–100 per cent of structure destroyed). All of the main historically valuable elements inside the cultural heritage site are destroyed.</p> <p>Severe Loss Site Severely damaged: a significant part of the visible key elements of the site has collapsed or is partially damaged (40–80 per cent of structure damaged) or significant military or civilian activity has contributed to extensive damage at the site. Many of the main historically valuable elements of the cultural heritage site are severely damaged causing severe loss.</p> <p>Moderate Loss Site Moderately damaged. Limited damage observed relating to key elements of the site (5–40 per cent of structure damaged) or where military or civilian activity has contributed to damage. Some of the main historically valuable structures inside the cultural heritage site are moderately damaged causing moderate loss.</p> <p>Minimal Loss Site Possibly damaged Assessed site structures do not appear to be damaged, but debris is visible around key site structures. None of the main historically valuable elements of the cultural heritage site are damaged.</p>	<p>RECOVERY – Damages – Damages in buildings</p> <p>RECOVERY – Damages – Damages in ecosystem</p>
--	--------------------------------	--	---

	MONITORING AND ASSESSING	predictive modelling spatially explicit	
		assess land use change	
		Landslide management By re-grading of slopes;	
		connections among heritage sites	
		conservation priorities	
		Cooperation among institutions that have complementary missions	
		Cooperation of heritage sites with universities	PREVENTION/ADAPTION PHASE – Adaptive Capacity- social capital/learning – social capital: ● Civic organizations per 10,000 persons ● Number of registered volunteers
		Take advantage of volunteers and support groups	PREVENTION/ADAPTION PHASE – Coping Capacity – Awareness/information – social capital: Risk Perception
		Local sense of ownership	
		Control encroachment	
		Monitor and manage water	
		Manage wildfires	
		Promote connections to natural areas	
		Promote rules and organizational culture	

		Take advantage of international organizations and exchanges	
		Promote and defend and expand urban heritage	
		Improve urban heritage through research and evaluation	
		Prevent and prosecute crime against people and property	
		Demonstrate, facilitate and promote public health and well-being	
		Demonstrate, facilitate and promote good environmental behaviour	

Table 7: Prioritization of Attributes according to the Shortlist of Indicators for URBAN Macrocategory

BUILDING MACROCATEGORY

1. HA ANATOMY AND BUILDING CATEGORIZATION	
IDENTIFIED ATTRIBUTES	CORRESPONDENCE IN INDICATORS
<u>DEFINING THE CH ASSET AND ITS SIGNIFICANCE (ID)</u>	
Denominations <ul style="list-style-type: none"> • Current Formal Name • Local Name • Name in other languages • Historical Name 	
Location <ul style="list-style-type: none"> • Country • City • Location • Location local name • Coordinates (Latitude / Longitude in WGS84 (Pseudo / Mercator) Spatial reference system) • Height above sea level (m) • Add one comprehensive photograph of the CH asset with surrounds 	
Site plan /map	
Governance <ul style="list-style-type: none"> • Ownership: • Governance type • Authorities • Management Public/Private • Open to public: (Y/N): 	
Category List UNESCO <ul style="list-style-type: none"> • Agricultural heritage • Archaeological sites • Architectural ensembles • Collections (movable) • Cultural landscapes • Cultural routes • Heritage canals • Historic buildings • Historic gardens • Historic landscapes • Historic towns and villages • Historic town centres • Historic urban landscapes • Human settlements • Industrial and technical heritage • Intangible cultural heritage • Mixed sites • Natural sites • Polar heritage • Prehistoric sites 	

<ul style="list-style-type: none"> • Rock art • Scientific heritage • Significant personalities (heritage related to-) • Underwater cultural heritage • Habitations urbaines • Vernacular architecture • World Heritage 	
<p>Classification / Registration Status and Current Conservation Status</p> <ul style="list-style-type: none"> • Listed in the UNESCO WHS: <ul style="list-style-type: none"> ◦ Ref no: ◦ Link • Listed in European Heritage Label <ul style="list-style-type: none"> ◦ Ref no: ◦ Link • Listed in the National List/Lists Replicable Field if Cross-Country <ul style="list-style-type: none"> ◦ Ref no ◦ link • Listed in Local List/Lists Replicable Field if Cross-Country <ul style="list-style-type: none"> ◦ Ref no: ◦ Link • Listed in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity <ul style="list-style-type: none"> ◦ Ref no: ◦ Link 	
<p>Links with other CH assets (i.e. Tangible and Intangible heritage related CH assets in the area)</p>	
<p>Overall description of the CH asset in the current situation with its main features and components (to be listed in the field below) that will allow to directly link to specific analyses and detailed information in the Clusters of Resources)</p>	<p>Sensitivity -> building characteristics -> Urban characterization -></p> <ul style="list-style-type: none"> • Land Take • Land cover • Urban growth, avg. annual rate (%). • Average slope • Average elevation • Thermal diffusivity • Solar reflectance <p>Sensitivity -> environmental sensitivity -> Urban characterization -> Buildings in hazard area</p>
<p>Simple/Complex CH asset (Single Building or Complex Building)</p> <ul style="list-style-type: none"> • Simple site: Specify according to the UNESCO Thesaurus for descriptive 	

<p>terms [e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches]</p> <ul style="list-style-type: none"> Complex Site: Specify in the cell below, indicate detailed list of CH components 	
<p>Detailed list of BUILDING Components List Components and related Types Specify according to the UNESCO Thesaurus for descriptive terms (e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches)</p>	<p>Sensitivity -> building characteristics -> Building characterisation</p> <ul style="list-style-type: none"> New buildings rate # of one floor houses % of buildings complying with hazard-resistant building codes and/or standards <p>Sensitivity -> environmental sensitivity -> Urban characterization -> Buildings in hazard area</p>
<p>Material and Techniques</p> <ul style="list-style-type: none"> 300 words max Overall description of the historical Materials and Techniques of CH asset in relation to its components Link to Related Resources 	
<p>Materials List</p> <ul style="list-style-type: none"> Main material of the structure Horizontal structure material Roof material Roof type Secondary material of the structure (if any) 	
<p>Techniques List</p>	
<p>Restoration and Reinforcements</p> <ul style="list-style-type: none"> Latest Intervention Date and Type Link to Related Resources Reinforced-concrete slab: Roof (yes/no), vault (yes/no), horizontal structures (yes/no) Placcaggi armati in cls: muri (yes/no) Pilastri in cls armati in murature/in elementi architettonici antichi (yes/no) Chiodature armate con iniezioni Regeneration of walls with concrete injections (yes/no)" Tie bars (yes/no) Concrete underpinning or plinth (yes/no) Prestressed cables - walls or other elements (yes/no) Micropile underpinning bracket (yes/no) Roof/floor edge beam (yes/no) 	

Main Historical Information <ul style="list-style-type: none"> • Date of construction/Century • Historical period • Timeline • Architects/Artists • Patronage • Archaeological excavations (repeatable field) • Name of historical territory 	
Function and uses <ul style="list-style-type: none"> • Current function • Historical function (repeatable field) • Open to public (Y/N) • Used by Local citizen • Touristic use and system of admittance and management • Number of CH asset staff • Number of CH asset inhabitants 	exposure -> individuals -> Demographic exposure -> Population in hazard area exposure -> Community exposure -> processes activities
Links with other CH assets	
CH significance to community in terms of social resilience (this should be collaborative)	
Inspection Information <ul style="list-style-type: none"> • Inspector(s) Name • Inspector(s)' institution/affiliation • Inspection Date: • Inspection timing (indicating the duration of the inspection) • Type of inspection* (Suggested value: regular Inspection, emergency condition assessment, rainy season inspection) • Inspection Management Public/Private and responsables • Accessibility on inspection Day (Suggested values: open access, guarded, closed) • Weather condition on inspection day (Suggested values: raining, no raining) 	
2. DEFINING THE RISK	
Hazard Type According to SHELTER Indicators shortlist	source/hazards -> frequency -> Flood Hazard source/hazards -> frequency -> Hazard Characterization
Exposure Type	
Vulnerability	
Monitoring Time	
3. DEFINING THE CNH ASSET IN ITS CONTEXT	

3.1 Environmental Context Vulnerabilities (terminology acc to. ontologies) (TEC)	
Overall description of prevalent situation according to Geological, hydrological, and meteorological information on the nature of the climate, soil, fault lines (if any), water table, surface water such as a river, etc.	<p>exposure -> object/buildings/infrastructure -> Urban characterization -> Buildings in hazard area</p> <p>exposure -> object/buildings/infrastructure -> Urban characterization -> Critical facilities in hazard area</p> <p>exposure -> object/buildings/infrastructure -> Urban characterization -> Land take in hazard area</p>
Environmental Conditions to Climate Change	<p>source/hazards -> magnitude -> rainfall characterization -> Daily maximum precipitation corresponding to the return period T</p> <p>source/hazards -> duration -> Storm characterization -> Storm duration</p> <p>source/hazards -> duration -> Heat-wave characterization -> Temperature above 35°C for more than 3 consecutive days</p> <p>source/hazards -> duration -> Heat-wave characterization -> The daily maximum temperature of more than 5 consecutive days exceeds the average maximum temperature by 5°C, the normal period being 1961–1990</p>
Meteorological and climatological conditions	<p>source/hazards -> magnitude -> heat-wave characterization -></p> <ul style="list-style-type: none"> • ONRN indicators for heatwave • Daily mean temperature • Thermal shock [Tmax-Tmin] • Daily sun hours • Mean relative humidity • Daily humidity cycle shocks [RH(n)-RH(n+1)>25%] • Relative humidity concentration [nRH>75%] <p>source/hazards -> Intensity, duration and frequency -> Rainfall characterization -> IDF (intensity duration frequency) curves</p>
Water quality: surface and groundwater	<p>source/hazards -> magnitude -> Storm characterization -> Wind speed (Hurricane, violent storm, heavy storm, storm)</p> <p>source/hazards -> magnitude -> Storm characterization -> gust strength</p>

	source/hazards -> magnitude -> Storm characterization -> wind pressure source/hazards -> magnitude -> Storm characterization -> Lifted index source/hazards -> magnitude -> Storm characterization -> Wind speed (meter /second)
Air and noise quality	exposure -> Ecosystems -> Pollution -> Air quality
Soil quality	source/hazards -> magnitude -> Urban characterization -> Subsidence rate sensitivity -> environmental sensitivity - > Soil -> Soil stability sensitivity -> environmental sensitivity - > Soil -> Soil water content sensitivity -> environmental sensitivity - > No subcategory -> Soil Water Index (SWI)
Hydrological general information: water cycle, networks	source/hazards -> magnitude -> evalua- tion of ecological niche -> Annual Mean Temperature source/hazards -> magnitude -> evalua- tion of ecological niche -> Annual Precip- itation
Geology general information	source/hazards -> magnitude -> Earth- quake characterization -> Peak Ground Acceleration (PGA) source/hazards -> magnitude -> Earth- quake characterization -> Level of Seis- mic Hazard source/hazards -> magnitude -> Earth- quake characterization -> Earthquake intensity (Modified Mercalli scale)
Ecosystems services and biodiversity con- ditions	sensitivity -> environmental sensitivity - > No subcategory -> <ul style="list-style-type: none"> • Structural connectivity of green infrastructure • Functional connectivity of green infrastructure • Number of non-native species of flora introduced (total number) • Number of non-native faunal species introduced (total number) • Species diversity within defined area per Shannon Diversity Index • Number of species within defined area per Shannon Evenness Index • Number of veteran trees per unit area (no./ha) • Quantity of dead wood per unit area (m3/ha)

	<ul style="list-style-type: none"> • Extent of habitat for native pollinator species (ha) • Proportion of natural areas within a defined urban zone (fraction or %) • Number of conservation priority species (no./ha) • Number of native/local provenance species (no./ha) • Number of native bird species within a defined urban area • Change in number of native species compared to a baseline number of species • Area of habitats restored (ha) • Habitat functional composition (relative abundance of functional features) • Shannon Index: This indicator corresponds to the proportion of bare, turf grass, rough grassland and herbs, shrubs, trees and of built environment • Urban Green Space proportion. This indicator is defined as the simple ratio of the natural areas (A_n) per the total area (A_c). The objective is to determine if the NBS solution increases or maintains the proportion of areas supporting biodiversity in the city or neighbourhood • Plant/root decay rate
Energy infrastructures with potential risk (energy centrals, nuclear centrals, trafos, etc.)	
Degradation mechanisms	
3.2 Geographical Context and Physical Asset	
Description of CH asset surroundings including Immediate neighborhood, village, district, infrastructures, natural asset	Sensitivity -> building characteristics -> Urban characterization -> <ul style="list-style-type: none"> • Land Take • Land cover • Urban growth, avg. annual rate (%) • Average slope • Average elevation • Thermal diffusivity • Solar reflectance
Topographical characterisation (Site configuration)	
Geo-Morphology characterisation (Soil configuration)	source/hazards -> magnitude -> Urban characterization -> Subsidence rate

Physical Infrastructures and networks in the surroundings <ul style="list-style-type: none"> transport network (roads, paths) water management and sanitation (drainage, sewage system) energy infrastructures (generation, transformation) energy networks (distribution) 	sensitivity -> infrastructure characteristics -> communication -> Percent population with a telephone sensitivity -> infrastructure characteristics -> communication -> % Population with access to broadband internet service sensitivity -> infrastructure characteristics -> urban characterization -> Average percent perviousness sensitivity -> infrastructure characteristics -> urban characterization -> Dam capacity sensitivity -> infrastructure characteristics -> urban characterization -> Thermal diffusivity sensitivity -> infrastructure characteristics -> urban characterization -> Solar reflectance adaptive capacity -> social capital/learning -> Infrastructure -> Psychosocial support facilities per 10,000 persons adaptive capacity -> social capital/learning -> Social capital -> Red cross volunteers per 10,000 persons adaptive capacity -> social capital/learning -> Social capital -> # of registered volunteers
Isolated area (Yes/not)	
Natural barriers (in the surroundings)	
CH asset Boundaries	
CH asset Buffer zone	
Access to CH asset (attach a map and/or photos) This should be linked to communication/transport network	
Access to the area (attach a map and/or photos) This should be linked to communication/transport network	
3.3. Cultural, Anthropological and Social Context (Intangible Heritage)	
Historical readings	transformative capacity/inherent resilience -> <ul style="list-style-type: none"> o Social memory o Living with uncertainty/improvising o Self-organisation, reflective and shared learning o Resourcefulness/Efficiency/ o Collaboration/inclusive/diversity/intersectoriality
Historical references	
Collective Memory and Traditions	
Local Knowledge information	
Ethnic traditions	
Ethnographic information	

	<ul style="list-style-type: none"> o Innovation o Robustness/Strength/appropriately connected o Coupled with Local Natural Capital
3.4. Economic context	
CH asset revenues in Euros	
CH asset insurance costs	
Provide a description of CH asset in its HA in term of economic situation	
GDP in the region	adaptive capacity -> economic capital
CH economic relevance in the Historic area	sensitivity -> economic characteristics adaptive capacity -> cultural capital / identity
Tourism revenues in the HA	
Main economic sector	
Main revenues type in the Historic area	
CH asset approximately yearly investment costs	
3.5. Policies and Planning context	
Spatial and Urban planning structure - Urban /regional Plans/strategies (overall planning but also specific to squares, sites et	adaptive capacity -> institutional capital/governance
The physical planning (transport, infrastructure) of the area in which the property is located- The physical characteristics of the area in which the CH is located, has been already characterized above, under Geographical and Physical Context in terms of infrastructures and networks- have been already	adaptive capacity -> built capital/infrastructure -> Infrastructure -> Hospital beds per 10,000 persons adaptive capacity -> built capital/infrastructure -> Sub-category (non) -> Percentage of existing infrastructures provided with back-up systems adaptive capacity -> natural capital
Pre-Disaster Recovery Planning	
3.6. LINKS TO OTHER CH ID Catalogues and Inventories (Interoperability) TASK 1.3 (ISMB)	

Table 8: Prioritization of Attributes according to the Shortlist of Indicators for BUILDING Macro-category

7 The Interactive Digital Template

The link for the interactive digital template: <https://docs.google.com/spreadsheets/d/1Dp1jAOHrmkXUIIVXM-9FnP49w1wLbdHzcjVEm-Fh1eU/edit#gid=1420174272>

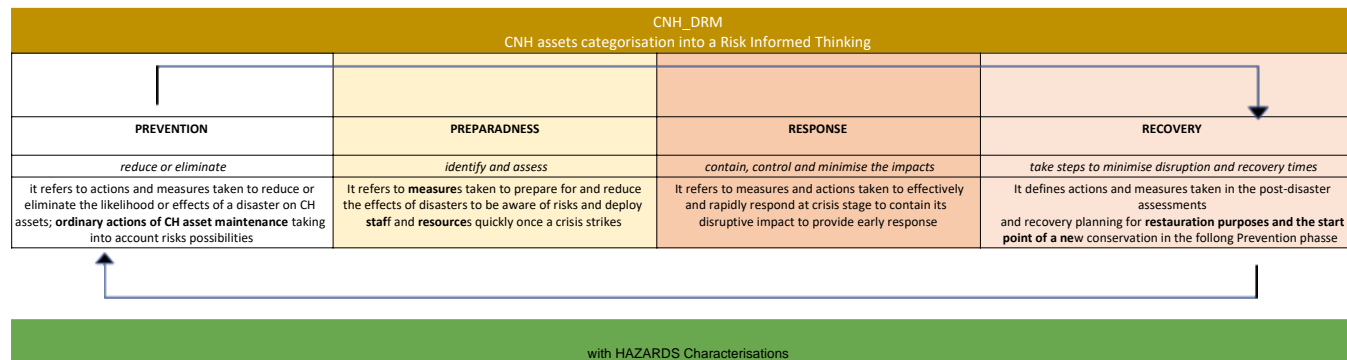
7.1 Sheet 1: Cover - Anatomy of HA in DRM perspective



DELIVERABLE 2.3

ANNEX 6

Deliverable Authors:	Rosa TAMBORRINO Mesut DINLER	POLITO
Deliverable Contributors	Louis Durrant Andrea Ugolini Angela Santangelo Eleonora Melandri	ULIEGE UNIBO



7.2 Sheet 2: CNH asset ID_Risk

		PREVENTION	PREPARADNESS	RESPONSE	RECOVERY		
CULTURAL and NATURAL HERITAGE ASSET ID							
Description of the CNH asset, its components and its context							
		(text)	Defining CNH asset with special measures taking into account its vulnerabilities	Update data and Information	Provide new state of the art		
Defining the CNH asset and its significance	Denomination	Current Formal Name					
		Local Name					
		Name in other languages					
	Location	Country					
		City					
		Location/address					
		Geographic Coordinates (Latitude / Longitude)					
		Spatial reference system in WGS84 (Pseudo / Mercator)					
		Height above sea level (m)					
		GIS system	Geometry type (polygon, line, point)				
	Cadastral Data						
	Conservation Status and pre/post disaster assessment according to the Indicators of State of Conservation ISC (Glossary)	Add List of Value categories for Integrity	Baseline statement on Integrity	Preliminary pre-disaster assessment evaluation of Conservation Status ISC based	Damages list according to List for Integrity	Preliminary Response/Recovery assessment ISC based	Preliminary Overall Post Disaster assessment evaluation (select below)
		Add List of Value categories and Conservation Status for Authenticity according to Glossary	Baseline statement on Authenticity	High	Damages list according to List for Authenticity	Preliminary Response/Recovery assessment for Authenticity	Severe Loss
		Add List of value categories and Conservation Status for Cultural Significance according to Glossary	Baseline Statement on Cultural Significance	Medium	Add List of value categories and Conservation Status for Cultural Significance	Preliminary Response/Recovery assessment for Cultural	
		Add other eventual value categories to be considered according to Glossary				Post Disaster detailed assessment	Further Post Disaster evaluation (select below)
							Biological Attacks
	Knowledge assessment	Knowledge gap -Lack of consistent and comparable data	improvements provided	Preparedness Knowledge gap -Lack of consistent and comparable data			Recovery Knowledge gaps - Lack of consistent and comparable data
		KL1: Limited knowledge		KL1: Limited knowledge			KL2: Normal knowledge
		Knowledge gap - Little scientific understanding/measurement of significant attributes in past events		Preparedness Knowledge gap - Little scientific understanding/measurement of significant attributes in			Recovery Knowledge gap - Little scientific understanding/measurement of significant attributes in past
		KL3: Full knowledge		KL1: Limited knowledge			KL1: Limited knowledge

	Knowledge gap -Few evaluations of critical vulnerability factors		Preparedness Knowledge gap -Few evaluations of critical vulnerability factors				Recovery Knowledge gap -Few evaluations of critical vulnerability factors
	KL2: Normal knowledge		KL2: Normal knowledge				KL2: Normal knowledge
	Final knowledge assessment evaluation		Preparedness Final knowledge assessment evaluation				Final Recovery knowledge assessment evaluation
Photograph	Add one comprehensive photograph	Photographs	Photograph of area under risks	Photographs	Photograph of area during the occurred Hazard event	Photographs	Photograph of the area after the occurred Hazard
Site plan/Map	Add a plan of CNH asset in its surroundings	Site plan	Indicating the access to the asset				
HA type	Macrosite/Single site						
	Mixed site Yes/no						
	Human Settlement size (Select City)						
	Human Settlement in CNH site. Define:						
	Human Settlement in Protected Area. Define:						
	Protected area type (Select below)						
	Global Geopark						
	Natural area in Human Settlement. Define:						
	Natural area in Building Plot. Define: (e.g. historic garden related to Building)						
	Building in Human settlement						
HA characterisation	Building in Natural site. Define:						
	Natural/Territorial:Degree of Naturalness (Select below)						
	4 Cultural assisted system						
	Urban: Degree of urbanisation (Select below)						
	Moderately urbanized						
	Single Building / Complex building						
HA Scale (according to SHELTER)	District						
Marcocategory	Urban						
CNH Type	Tangible Heritage (Movable)						
Category List Glossary (Select from the table by clicking on arrow)	Agricultural heritage						
Other Cultural Natural Property Type	Architectonic inscription						
	If Other, define:						

Type	Provide definition:						
Other Cultural Natural Property Type	Historic neighborhood						
	If Other, define:						
	Provide definition:						
Other Cultural Natural Property Type	Cemetery						
	If Other, define:						
	Provide definition:						
Classification / Registration Status	Listed in the UNESCO WHS: Ref no: Link						
	Listed in IUCN Protected site Classification/Registration Details (Select below) Ref No: Link						
	I a. Strict Nature Reserve						
	Listed European Heritage site Ref No: Link						
	Listed National Heritage Site Ref No: Link						
	Local Heritage Site Ref No: Link						
	Listed in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity Ref no: Link						
	Other classification						
	More classification and Classification/Registration Details						
	Other site of cultural natural significance						
Simple/Complex CNH asset	Simple site: Specify according to the UNESCO Thesaurus for descriptive terms [e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches]						
	Complex Site: Specify in the cell below, indicate detailed list of CNH components (see the cell below)						
Movable Heritage in the CNH asset (Repeatable)	Specify List of Movable Heritage						

Detailed list of CNH components in the case of composite CNH classification	List Components and related Types Specify according to the UNESCO Thesaurus for descriptive terms (e.g. http://vocabularies.unesco.org/thesaurus/concept17008 for Churches)						
CNH asset hosting events, festivals, fairs, other	Specify Periodic Events hosted, Period of the year, number of visitors						
Overall identification and assessment of the HA in the current situation with its relevant values and physical components listed and defined that will allow directly linking to	Overall identification and assessment of the CNH asset in the current situation with its relevant values and physical components listed and defined that will allow to directly link to specific analyses and detailed information in the Clusters of Ressources)	Overall description of the HA in the preparedness condition with its main features and components that will allow to directly link to specific analyses and detailed information in the Clusters of Ressources)	min 300 - max 500 words (fill in according to the indications)	Overall description of the HA asset in the case of disaster in the Response phase with specification of the condition of its main features and components that will allow to directly link to specific analyses and detailed information in the Clusters of Ressources)	min 300 - max 500 words (fill in according to the indications)	Overall description of the HA in the case of disaster in the Post Disaster condition with its main features and components that will allow to directly link to specific analyses and detailed information in the Clusters of Ressources)	min 300 - max 500 words (fill in according to the indications)
Overall identification and assessment of the CNH asset in the current situation with its relevant values and physical components listed and defined that will allow to directly link to	min 300 - max 500 words (fill in according to the indications)	Overall description of the CNH asset in the preparedness condition with its main features and components that will allow to directly link to specific analyses and detailed information in the Clusters of Ressources)	min 300 - max 500 words (fill in according to the indications)	Overall description of the CNH asset in the case of disaster in the Response phase with specification of the condition of its main features and components that will allow to directly link to specific analyses and detailed information in the Clusters of Ressources)	min 300 - max 500 words (fill in according to the indications)	Overall description of the CNH asset in the case of disaster in the Post Disaster condition with its main features and components that will allow to directly link to specific analyses and detailed information in the Clusters of Ressources)	min 300 - max 500 words (fill in according to the indications)
BUILT Environment and archeological sites Material and Techniques	300 words max Overall description of the historical Materials and Techniques of CH asset in relation to its components Link to Related Ressources						
	Main material of the structure						
	Secondary material of the structure (if any)						
	Primary structure construction technique (rubble masonry, sack masonry, load-bearing masonry, adobe, adobe and timber, reinforced concrete pillars, etc...)						
	Horizontal structure material						
	Roof material						
	Canopy/shelter for archeological sites						

BUILT Environment and archeological sites Restoration and Reinforcements	Latest Intervention Date and Type Link to Related Ressources						
	Reinforced-concrete slab: Roof (yes/no)						
	Reinforced-concrete slab:vault (yes/no)						
	Reinforced-concrete slab:horizontal structures (yes/no)						
	Regeneration of walls with concrete injections (yes/no)						
	Tie bars (yes/no)						
	Concrete underpinning or plinth (yes/no)						
	Prestressed cables - walls or other elements (yes/no)						
	Micropile underpinning bracket (yes/no)						
	Roof/floor edge beam (yes/no)						
	Canopy/shelter for archeological sites						
Natural/Territorial Ways and techniques of cultivation	Farming areas						
	Fish farming						
	Vineyard						
	Other Define						
Design and management works	Permanence of historic land planning (e.g. centuriation, rural land parcelling, settlement location, roadtracks, water and channel networks)						
	Terracing						
	Retaining walls						
	Drainage works						
Techniques of Reinforcement and ways of traditional maintenance	Canals						
	Reforestation works						
	System recovery						
	Reestablishment/restoration						
URBAN Public facilities and services	Maintenance forest works						
	Public facilities and services (number, types, and if of historical/architectural interest) e.g. Municipality and administrative buildings, movie theaters, hospitals, religious centers, schools, banks, shopping malls, market building, museums, libraries, religious centers, schools						
Urban Fabric Type	High Density Cluster (Urban Centre)						
	Dense Urban Cluster						
	Semi-Dense Urban Cluster (Town/Urban)						
	Suburban Grid Cell (Suburban)						
	Rural Cluster						

	Low Density Rural Grid Cell						
	Very Low Density Grid Cell						
	Date of construction/Century						
	Historical period						
	Overall description of Territorial and Environmental transformations						
	Timeline						
	Architects/Engineer/Landscapers/Archaeologist/Artist						
	Patronage						
	Archaeological excavations (repeatable field)						
	CNH Historical Name						
	Name of historical territorial area						
	Current function						
	Historical function (repeatable field)						
	Open to public (Y/N)						
	Used by Local citizen						
	Touristic use and system of admittance and management						
	Number of CNH asset staff						
	Number of CNH asset inhabitants						
	Land cover						
	Dimensions						
	Volume						
	Number of floors						
	Total Surface of Natural areas hectare						
	Green areas surface shaded area						
	Water surface						
	Built areas Surface						
	Farming Surface						
	Demographics						
	Road and rail surfaces						
	Connectivity with other green areas						
	Current Land Cover						
	Demographics						
	Human Settlements size (Select below)						
	Metropolis						

	Quantitative Data	Urbanization degree (Select below)						
		Moderately urbanized						
		Water surface						
		Land Use percentage						
		Residential area						
		Commercial area						
		Industrial area						
		Excavation area						
		Tourist-leisure area						
		Infrastructural						
		Connectivity						
	Links with other CNH assets	Movable						
		Intangible						
		Other Tangible						
	Inspection Information	Inspector(s) Name	Eventual improvements to the Inspection Information		Disaster occurred Description		Post Disaster Condition	
		Inspector(s)' institution/affiliation						
		Inspection Date:						
		Type of inspection* (Suggested value: regular inspection, emergency condition assessment, rainy season inspection)						
		Inspection Management Public/Private and responsables						
		Accessibility on inspection Day (Suggested values: open access, guarded, closed)						
		Weather condition on inspection day (Suggested values: raining, no raining)						
Defining its Risks	Hazard Type According to SHELTER indicators	Fire						
		If Other, Define:						
	Exposure Type	Hazard characterization						
		Define:						
	Vulnerability	Historic building environment resilience						
		Define:						
	RESILIENCE INDICATORS according to SHELTER indicators							
	Monitoring Time	Existing Monitoring Scheme						
		wildfires scale						

	Disaster Past events	frequency and intensity of wildfires					
		period (spring fires cause different and more severe changes in many biological processes)					
		hectares burned					
		loss of human life					
		storms/storm wind					
	Environmental Context and RISK Exposure	Overall description of prevalent situation according to Geological, hydrological, and meteorological information on the nature of the climate, soil, fault lines (if any), water table, surface water such as a river, etc.					
		Ecosystem Type (Select below)					
		Terrestrial - Heathland and shrub					
		Meteorological and climatological features					
		Ecosystem natural, semi-natural, and Ecosystem Services					
		drought and high temperatures events					
		Storm wind					
		Dry days number for year					
		Rain days number for year					
		Water quality: surface and groundwater					
		Air quality					
		Noise					
		Soil degradation mechanism					
		Air degradation Mechanism					
		Water degradation mechanism					
		inappropriate development					
		resource extraction damages					
		oil spills					
		mining					
		Deforestation works					
		illegal logging					
		poaching					
		agricultural encroachment					
		threats induced by armed conflict and war					
		threats induced by earthquakes					
		invasive species					
		Overall description of CNH asset surroundings including Immediate neighborhood, village, district, natural asset					

Geographical Context and Physical Asset	Physical Infrastructures above ground and networks in the surroundings (e.g. dam, tunnels) (Repeatable field):transport network (roads, paths), waterways, water management and sanitation (drainage, sewage system), energy infrastructures (generation, transformation), energy networks (distribution)					
	Physical Infrastructures below ground and networks in the surroundings (e.g. dam, tunnels) (Repeatable field):transport network (roads, paths), water management and sanitation (drainage, sewage system), energy infrastructures (generation, transformation), energy networks (distribution)					
	Energy infrastructures with potential risk (energy centrals, nuclear centrals, trafos, etc.)					
	energy-efficient facilities					
	water use efficiency at its facilities					
	Topographical characterisation (region configuration). (Select below)	Terrain Digital Model	Roads transportation infrastructure			
	Coastal					
	Site (Select below)					
	Canalfront					
	If Other, define:					
	Distance from water basin/overheading mountains					
	Access to CNH asset (attach a map and/or photos)					
	Access to the surroundings (attach a map and/or photos) This should be linked to communication/transport network					
	disabled people accessibility (Accessibility)					
	disabled people accessibility (visually)					
	disabled people accessibility (hearing impaired)					
	direct public transportation services					
	park with gateways					
	Presence of orientation signs					
	Presence of a range of languages in signs					
	Presence of crossed by public roads					
	Presence of well-mapped and clearly marked pathways					
	random path-making policy					
	Presence of hicking paths					
	Presence of bicycle routes					

Defining the CNH asset in its context	Presence of walking trails						
	Presence of picnic ground areas						
	Presence of campgrounds areas						
	Surroundings communities						
	Isolated area (Yes/not)						
	Natural barriers (in the surroundings)						
	Distance of tree from building and tree species						
	Geo-Morphology characterisation (Soil configuration and slope)		Utilities or service infrastructure				
	CNH asset Boundaries(legal boundaries as i.e. property of land)						
	CNH asset Buffer zone						
	Hydrological classification information: :						
	Geology classification						
	Soil type						
	Soil Degradation mechanism						
	Biodiversity in the HA Select below						
	Main variety identification						
	Vegetation types Native of the area						
	Other Vegetation type						
	average of species types						
	Rare species						
	century-old trees						
	fire-adapted and fire-dependent vegetation						
	Trunk diameter of the top five most common species						
	Animals species type with huge numbers						
	Animals species with low numbers						
	Rare species						
	Presence of Erosion areas						
	ancient wooded area						
Local and Traditional Knowledge	Hazards local knowledge						
	Construction techniques and materials traditional knowledge						
	Resilient behaviours						
	vernacular architecture and local traditions						
	Cultural significance						
	Multicultural belongings and collective memories						
	Sense of Place						
	Cultural significance to community and social resilience						

Cultural, Historical, Anthropological and Social Context /Intangible Heritage	Overall Description Historical readings						
	Main Historical references						
	Linked Collective Memories and Traditions						
	Intangible values						
	Ethnic traditions						
	Ethnographic information						
	Architectonic Heritage						
	Natural Heritage						
	Landscape Perception						
	Industrial Heritage						
Governance and Administrative Info	Urban Heritage						
	Property Ownership (if applicable)						
	Governance system						
	Authorities:						
	Management Public/Including Private/Private						
	Open to public: (Y/N)						
	Governance Type (Select below)						
	Community led governance						
	Public agencies						
	Wildlife Service						
	Responsibles for fire prevention and control						
	Municipal Council involvement						
	National and regional governmental agencies						
	NGOs						
	Community Groups						
	Local associations						
	A watershed organization composed of representatives of stakeholders						
	Organizations						
	Control policies						
	design for future urban growth						
Antropic and Economic Context	regional policies						
	Urban planning rules						
	urban conservation plans						
	rehabilitation rules						
	CNH asset revenues						
	CNH asset insurance costs						
	Provide a description of CNH asset in its HA in term of economic situation						
	GDP in the region						
	CNH economic relevance in the region						
	Tourism revenues						
	Main economic sector in the region						

LINKS TO OTHER CNH Catalogues and Inventories and Interoperability	Policies and Planning context	Main revenues type in the region						
		CNH asset approximately yearly investment costs						
		Spatial and Urban planning structure - Urban /regional Plans/strategies (overall planning but also specific to squares, sites etc	Emergency (planning and strategies)	Emergency exit planning				
		Pre-Disaster Recovery Planning						
	Existing Inventories	Vegerarian species inventory						
	Building inventory	Detailed historical survey						
	Local Inventories	Inventories for Conservation areas						
	Existing National catalogues information. Indicate language							

7.3 Sheet 3: Data and Information Resources

PREVENTION			PREPARADNESS		RESPONSE	RECOVERY			
RESOURCES									
Analytical Information, Documentation, Studies and Data									
Collecting Existing	Existing Databases	CH databases local databases risk database	Creating a <i>corpus</i> of specific documentation (finalised to the CH asset Anamnesis) through: - its completion - its conservations - its management - its availability	Digitisation of all documentation	Exploiting/Benefitting from the <i>Dbs/thematic maps for a early Diagnosis</i>	Exploiting/Benefitting from the corpus of documentation/ Dbs/ for a reflective Diagnosis and Control	Visual 3D Reconstructions		
	Inventories	CH inventories Catalogues etc. (digitalized? y/n)		Addressed documentation completion					
	Type (To be Integrated by other tasks): [1]	Fire		Addressed documentation completion		Collecting new data and Update documentation			
	Data on Risk component (To be Integrated: by other tasks) [2]	Hazard characterization		Addressed documentation completion on Risks					
	Historical data (values registered in past events)								
	Economic Data		Creating a database	CH asset organized Digital Archive					
	Visual Records and Spatial Data	Current Maps							
		Technical Maps							
		Risk Maps							
		Historical maps							
		Photogrammetry Survey							
		Architectural Survey							
		Architectural drawn							
		Technical details dr	Creating <i>Thematic Maps</i>	Maps of the area or region in which the property is located, such as a hazard vulnerability map	Exploiting/Benefitting from Thematic Maps	Updating Thematic Maps			
		Photographs							
		Aerial photographs							
		Videos							
		Historical graphic/iconographic records							
		CH asset materials chemical documentation							

Documentation, including its updates, its storage places, its digitisation	Technical Records	CH asset Colors	Creating a Bank of materials samples	Tangible heritage samples of materials/colors/textures	Exploiting/Benefitting from the Bank of Materials	Using and Implementing the Bank of materials and cataloguing post disaster ruins	Extracting and collecting new materials,
		chemical documentation					
		Textures					
	Digital born records	Reposts on construction techniques					
		e-sources					
		3D models					
	Conservation and restoration data, records and reports (Intrinsic resilience characteristics) TO BE COMPLETED (Unibo)	Social media data					
		Year of Intervention					
		Type of Intervention (Suggested values: conservation (structural), conservation (chemical), re-plastered/whitewashed, restoration, reconstruction, excavation, other (specify))					
		Main materials used in intervention					
		Object of intervention (Description)					
		Previous investigation and report* (Suggested values: documentation, field observation, survey, technical report, other (specify)) (Description)					
		Natural elements documentation					
		Agricultural data (grapes)					

<i>Extracting</i> main aspects of CH assets and its vulnerabilities by Scientific studies and Local Knowledge extraction including its updates, its storage places, its digitisation	Historical reports	<i>Designing a datalake and providing its availability for remote accessing</i>	Creating CH assets Digital libraries	<i>Exploiting/Benefitting from scientific studies</i>	Damages Surveys and Reports
	Research output				
	Academic Research and Thesis				
	Archaeological Surveys and Reports		Digitisation of specific studies		
	Social engagement Reports		Extracting information		
	Museums reports		Taxonomy		
	Oral Records				
	Preventive studies about CH asset vulnerability and related past events		Onthologies		
	Environmental/geological/meteorologic al assessing studies/monitorin				
<i>Organising</i> Geolocalised information and digital tools	Identify existing tools for the area	<i>Conceiving and realizing GIS linked to dabases: Geolocalised detailed information about each CH asset including information about:</i>	Mapping of all the factors including Historic Events	<i>Exploiting/Benefitting from GIS and DBs for localizing impacts</i>	Updating Geolocalised post disaster data
			Topographical characterisation (Site configuration)		
			Geo-Morphology characterisation (Soil configuration)		
			CH asset Boundaries		
			CH asset Buffer zone		
			Access		

7.4 Sheet 4: Equipment, Tools and Procedures

PREVENTION		PREPARADNESS		RESPONSE		RECOVERY	
EQUIPMENTS, TOOLS AND PROCEDURES Documentation, Information, Studies and Data							
Monitoring for a safeguarding Maintenance	Ordinary condition of CH asset definition	Reactive monitoring systems and safeguarding measures	Impact Analysis	Reactive crisis strategical safeguarding Response	Provisional safeguard systems	Extraordinary safeguarding Interventions: Restoration, Conservation, Rehabilitation in conservation areas (strategies, diagnosis, practices, priorities) and Controls (ICOMOS definitions)	Measure against imminent collapse of the structures (avoid modifying the site in an irreversible way)
	monitoring system sensors for CH asset		Specify vulnerabilities through structural analyses		Videos and sensors recordinGS		Conservation and reinforcement measures
	Ordinary condition of CH asset definition		Measures for Protection of tangible CH assets		Shoring up Systems		Remedial measures
			Measures for Evacuation of all movable CH assets		Urgent site-structural-solutions measures to stabilise the structure		Catalogue of damages/changed occurred to the CH
		Specific digital Apps and tools (for real time communication, training, advices, indications)		Providing Explanatory reports on decisions and interventions made			
		Digital Heritage	Creating Digital CH projects for digital exploitation of CH assets	Providing Digital CH asset uses	Providing CH assets information and exploitation	Engaging experts and citizens in CH Recovery	Digital
Continuously Risks assessment and Pre-disaster recovery planning	Seismic tests	Immediate Risk identification and assessment	Attained Risk manager	Early assessment	Assessing priorities through videos and sensors recording	Safety evaluation and Diagnosis (based on historical, qualitative and quantitative approaches)	Direct observation of the structural and material damages
	Other experiments and tests		Risk Assessment Report				Determine the secondary causes (specifically internal to the structure) of damage and decay
	Structural stability tests		Risk Management Plan				Evaluate the safety level of the structure
	Sensors tests		Recommended actions vs DRM phase	Crowdsourcing	Providing Diagnosis Reports		
			Risk assessment based on common threats				
	Social Media crowdsourcing	Material and structural tests					
		Social media news philtering services for collective CH Hazard characterization To be integrated (LINKS)					
Existing equipment and facilities for management systems in the CH assets	Specify Kind of equipment needed related to each risk type	Equipping CH assets with specific management systems and facilities	Establishing specific procedures	Emergency Response Plans	Providing First Aid to CH assets	Recovery Plans	CH damages assessment according to protocol
	Identifying the protocols		Providing guidelines for CH assets First Aid		Applying CH First Aid procedures		Adopting the specific procedures for each CH asset in HA
	Identifying the international						
	system of rescue of CH assets		Provide shelter for the evacuation of movable CH assets		avoiding further damage to heritage		Assign building materials and elements to the buildings from which they originate
	provide guidelines for maintenance		Providing Guidelines for Recorey				Record the places from which debris and materials are recovered
	established procedures for maintenance		Drills in CH assets and its frequency				Recording materials and debris in a central digital database
	specific instructions for safe procedures	health management in HA	Providing Shelters guidelines		Creating Shelters		Providing specific procedures to owners, residents, builders and workers
	ordinary drills in the area and its frequency	instructions for guidelines, advice and assistance			providing advices and assistance		providing assistance for the owners, residents, builders and workers engaged in clearing rubble and debris

PREVENTION		PREPARADNESS		RESPONSE		RECOVERY	
HUMAN RESOURCES							
Stakeholders, staff, risk management managers and responsible, citizens and communities involved at different level in CH management and/or risk management							
Stakeholders and relevant players analyses including its updates	Mapping governance and national/local management for DRM	Deploy stakeholders' connections	Direct link to the area chain of orders	Activating the CH assets Emergency chain		Organising the governance chain in the Recovery phase for avoiding damages to CH assets	
	Mapping the CH asset governance and management responsibilities		Identifying the Internal (to CH asset) CH_Risk responsible and chain of orders among the staff	Activating direct CH management responsables			
	Identifying detailed direct responsibilities for CH asset safeguarding in Emergency phase (e.g. for each department) and creating cooperation		Creating connections among the existing relevant institutions and the community within and around the property.			Organising CH assets and Cultural Institutions coordinating	
	Identifying the Cultural stakeholders		Activating collaboration among the CH assets management and staff and cultural institutions, the academic and research centers	Activating all collaborators for collecting information			
	Mapping local CH association and volonteers		Engaging Volunteers	Activating volunteers for crwdsourcing information		Cultural associations and Research institutions coordinated	
Training experts and aware users	Training Staff activities on CH assets vulnerabilities	Specialised Training in DRM in CH assets	Training the Staff	Activating the Staff for CH assets Emergency and First Aid	First aid providing and coordinating volunteers	providing reports	
	Provide clarifications and communication about CH assets vulnerabilities through communication activities and materials for citizens (activities and documentation)		Training the volunteers	Activating Volunteers for CH First Aid	organising groups	working under the direction of the staff	
	Provide clarifications and communication about CH assets vulnerabilities through communication (documentation materials for tourists and visitors) Organise joint courses for schools and young people		Simulations	Applying the procedures			

7.6 Sheet 6: Instructions for the template

Template for CH assets characterization in CH_DRM	Process for CH_DRM characterization	MACROCATEGORIES and scales	CH assets categorisation for Risk Assessment
<p>The template enables a methodology for DRR in Historic Areas through the characterisation of CH assets for Risk Informed Thinking.</p> <p>It identifies features and actions for safeguarding CH assets against and mitigating the impact of natural disasters. It introduces a systemic vision of CH assets within the Disaster Risk Management model by characterising the DRM model with its specific understanding for Historic Areas.</p> <p>The template is conceived as a methodology for collecting and integrating a wide range of information. It can be customized and prioritized to adapt to the SHELTER Project and OLS acquirments according to general and local strategies</p> <p>It is also intended to guide a continuous monitoring at each phase of DRM model by updating the information as a "self" assessment procedure. It can be managed at local level by heritage professional and conservators. It introduces a "Risk Informed Thinking" especially addressing CH assets to help decisions makers in identifying priorities.</p> <p>The template identifies 4 CLUSTER of relevant information that are defines by the attributes in 4 sheets though the phases of the DRM model.</p> <p>The CH asset ID sheet includes metadata intended for defining:</p> <ol style="list-style-type: none"> 1. CH asset significance by its tangible and intangible features 2. Its Risks characterization 3. CH asset contexts (Environmental with Risk exposure, Geographical and Physical, Anthropic and Economic, Cultural Historical Anthropological including Local and Traditional knowledge, Governance) 4. Link other CH Catalogue and Inventories <p>The RESOURCES sheet refers to Analytical Information and Documentation available to be collected or linked</p> <p>The EQUIPMENTS TOOLS AND PROCEDURES sheet requires collecting specific information for DRR</p> <p>The HUMAN RESOURCES sheet enable a survey on governance and management of CH asset and Risks and also allows identifying the network of stakeholders.</p> <p>A sheet with a GLOSSARY provides the CH categories identification</p>	<p>The template provides a survey methodology for including and organizing a related system of useful information for assessing and enhancing CH asset resilience</p> <p>The template shapes a process for the characterisation of CH assets. It is intended for identifying the measure of the Risk in CH asset. The sheets identifies a step by step process. The template shapes descriptors which require to fill in data and information.</p> <p>The process is intended to be performed first at the Prevention/Preparedness phases. The attributes allow customizing the process of characterisation for the specificities of each HA, for different kind of natural hazards, and for a collective characterisation</p> <p>Step by step characterisation approach:</p> <p>Step 1 ESTABLISHING THE CONTEXT Step 2 IDENTIFYING THE RISK Step 3 ANALYSING Step 4 EVALUATING</p>	<p>Historic Areas are complex systems including a range of CH assets and are CH assets in itself. They require analysis. Macrocategories allow take into account different range of scales and sites (complex sites to simple building) and cultural and natural features and values. They enable how to anatomize the HA by specifying its heritage characterization and other factors that are relevant for vulnerability and resilience.</p> <p>3 Macrocategory are identified: NATURAL by dark green color URBAN by blue color BUILDING by brown color</p>	<p>The methodology provide attributes and procedures that enable Pre and Post Disaster assessments.</p> <p>Pre and Post Disaster Knowledge assessment. KNOWLEDGE GAPS ASSESSMENT It enables to assess the type of knowledge lack and grade KL1 LIMITED KL2 NORMAL KL3 FULL</p> <p>PREVENTION/PREPAREDNESS PRELIMINARY ASSESSMENT to identify identify those elements and values to be estimated in case of future damages. RESPONSE/RECOVERY PRELIMINARY ASSESSMENT to identify qualitatively and quantitatively (information available about and) the damages</p> <p>POST DISASTER PRELIMINARY ASSESSMENT for sites CRITICAL LOSS: Site destroyed. All or most of the visible key elements of the assessed site have collapsed (80–100 per cent of structure destroyed). All of the main historically valuable elements inside the CHN site are destroyed.</p> <p>SEVERE LOSS: Site Severely damaged. A significant part of the visible key elements of the site has collapsed or is partially damaged (40–80 per cent of structure damaged) or significant military or civilian activity has contributed to extensive damage at the site. Many of the main historically valuable elements of the cultural heritage site are severely damaged</p> <p>MODERATE LOSS: Site Moderately damaged. Limited damage observed relating to key elements of the site (5–40 per cent of structure damaged) or where military or civilian activity has contributed to damage. Some of the main historically valuable structures inside the cultural heritage site are moderately damaged.</p> <p>MINIMAL LOSS: Site Possibly damaged. Assessed site structures do not appear to be damaged, but debris is visible around key site structures. None of the main historically valuable elements of the cultural heritage site are damaged</p> <p>POST DISASTER FURTHER ASSESSMENT for BUILDING</p>

8 CNH Glossary

Agricultural Heritage: In 2002, during the World Summit on Sustainable Development in Johannesburg, a Global Partnership Initiative was launched for the conservation and adaptive management of 'Globally Important Agricultural Heritage Systems'. According to this initiative, agricultural heritage systems are outstanding landscapes of aesthetic beauty that combine agricultural biodiversity, resilient ecosystems and valuable cultural heritage and agricultural systems constitute the foundation for contemporary and future agricultural innovations and technologies. Located in specific sites around the world, they sustainably provide multiple goods and services, food and livelihood security for millions of small-scale farmers [13].

Archaeological Heritage: As outlined in the Valetta Convention [14], archaeological heritage includes all remains and objects and any other traces of mankind from past epochs, the preservation and study of which helps to retrace the history of mankind and its relation with the natural environment. Excavations or discoveries and other methods of research into mankind and the related environment for archaeological heritage are the main sources of information. The archaeological heritage shall include structures, constructions, groups of buildings, developed sites, moveable objects, monuments of other kinds as well as their context, whether situated on land or under water. According to the European Charter of the Architectural Heritage, the **European architectural heritage** consists not only of our most important monuments: it also includes the groups of lesser buildings in our old towns and characteristic villages in their natural or manmade settings [15].

Archaeological sites: According to the 1990 ICOMOS Charter for the Protection and Management of the Archaeological Heritage, "archaeological heritage" is that part of the material heritage in respect of which archaeological methods provide primary information. It comprises all vestiges of human existence and consists of places relating to all manifestations of human activity, abandoned structures, and remains of all kinds (including subterranean and underwater sites), together with all the portable cultural material associated with them. [16]

Architectural ensembles: According to ICOMOS Open Archive, *Architectural ensembles* are among the 'heritage typologies'. [42]

Architectural Heritage: Definition of the architectural heritage is provided in Article 1 of the Granada Convention [17]. Accordingly, the expression "architectural heritage" shall be considered to comprise the following permanent properties: 1. monuments: all buildings and structures of conspicuous historical, archaeological, artistic, scientific, social or technical interest, including their fixtures and fittings; 2. groups of buildings: homogeneous groups of urban or rural buildings conspicuous for their historical, archaeological, artistic, scientific, social or technical interest which are sufficiently coherent to form topographically definable units; 3. sites: the combined works of man and nature, being areas which are partially built upon and sufficiently distinctive and homogeneous to be topographically definable and are of conspicuous historical, archaeological, artistic, scientific, social or technical interest.

Archaeological sites: According to the 1990 ICOMOS Charter for the Protection and Management of the Archaeological Heritage, "archaeological heritage" is that part of the material heritage in respect of which archaeological methods provide primary information. It comprises all vestiges of human existence and consists of places relating to all manifestations of human activity, abandoned structures, and remains of all kinds (including subterranean and underwater sites), together with all the portable cultural material associated with them[16].

Architectonic inscription: Architectonic inscriptions are words, texts, lettering, or symbols marked on a work, including texts, legends, documentation notes, or commemoration [18]

Archives: Institutions that store, maintain, and care for non-active public records or other important historical documents that are arranged as an organized body. The documents in an archive were received or originated in connection with the activities of an organization, institution or individual, and are preserved because of their continuing value.

Authenticity: According to The Operational Guidelines for the Implementation of the World Heritage Convention, depending on the type of cultural heritage, and its cultural context, properties may be understood to meet the conditions of authenticity if their cultural values (as recognized in the nomination criteria proposed) are truthfully and credibly expressed through a variety of attributes including: form and design; materials and substance; use and function; traditions, techniques and management systems; location and setting; language, and other forms of intangible heritage; spirit and feeling; and other internal and external factors. According to Guidance on heritage impact assessments for Cultural World Heritage Properties, authenticity relates to the way attributes convey OUV and integrity relates to whether all the attributes that convey OUV are extant within the property and not eroded or under threat.

City: City is a large, relatively dense settlement of heterogeneous people, with a large population and many services. It is a relatively permanent and highly organized center of population, of greater size or importance than a town or village. The concept of city refers to the urban community, and its culture, known as "urbanism." The name city may be given to certain urban communities by virtue of some legal or conventional distinction that can vary between regions or nations. In some classifications, the population of a city may be between 100,000 and 300,000 people, while a term "large city" is used when city has population less than one million people but over 300,000 people[19].

Collections (movable): According to *UNESCO Recommendation Concerning the Protection and Promotion of Museums and Collections, Their Diversity and Their Role in Society* [20], the term collection is defined as "an assemblage of natural and cultural properties, tangible and intangible, past and present". The recommendation also highlights that the protection and promotion of cultural and natural diversity are major challenges of the twenty-first century. In this respect, museums and collections

constitute primary means by which tangible and intangible testimonies of nature and human cultures are safeguarded.

Conurbation: Conurbation is a term coined by Patrick Geddes to describe towns and cities uniting into vast city-regions. It is a built-up area created through the coalescence of two or more once-separate urban settlements through development along the main inter-urban routes. [19]

Cultural landscape: In the UNESCO Expert Group Meeting on Cultural Landscapes in 1992, it was decided that 'cultural landscapes' fall under the definition of 'cultural heritage' made by Convention Concerning the Protection of the World Cultural and Natural Heritage [21] because the Article 1 states that 'the combined works of nature and man' should be considered as cultural heritage. The term "cultural landscape" embraces a diversity of manifestations of the interaction between humankind and its natural environment. Cultural landscapes often reflect specific techniques of sustainable land-use, considering the characteristics and limits of the natural environment they are established in, and a specific spiritual relation to nature. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal [22].

Also in the European Landscape Convention (2000) it is stated that the landscape has an important public interest role in the cultural, ecological, environmental and social fields, and constitutes a resource favourable to economic activity and whose protection, management and planning can contribute to job creation [22].

Cultural routes: According to the International Committee on Cultural Routes of ICOMOS (CIIC-ICOMOS), a cultural route is a land, water, mixed or other types of route, which is physically determined and characterized by having its own specific and historic dynamics and functionality; showing interactive movements of people as well as multi-dimensional, continuous and reciprocal exchanges of goods, ideas, knowledge and values within or between countries and regions over significant periods of time; and thereby generating a cross-fertilization of the cultures in space and time, which is reflected both in its tangible and intangible heritage[24].

Besides, the CoE has launched the Cultural Routes in 1987. According to CoE, the Cultural Routes demonstrate, by means of a journey through space and time, how the heritage of the different countries and cultures of Europe contributes to a shared and living cultural heritage [25].

Cultural significance: Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups[26].

Ecosystem: According to the UN's CBD, an ecosystem is a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

Geological Monument: Geological Monument can be found as a component of Geodiversity. Geodiversity terminology includes geoheritage which is defined as "components of natural geodiversity of significant value to humans, including scientific research, education, aesthetics and inspiration, cultural development, and a sense of place experienced by communities" and Earth Heritage which is defined as "the inheritance of rocks, soils and landforms (active and relict) and the evidence they contain that enables the history of the Earth to be unravelled" [43].

Geological interest is one of the major criteria for inscription on the World Heritage List. The Man and the Biosphere (MAB) Program is a particularly important compliment to the World Heritage List in that it recognizes representative sites. A similar official UNESCO designation does not yet exist for geological sites although the 'Geoparks' concept has been developed to fit this role. UNESCO currently supports the use of the concept to recognize representative sites.

Geopark: According to European Geoparks Network, "a European Geopark is a territory, which includes a particular geological heritage and a sustainable territorial development strategy supported by a European program to promote development. It must have clearly defined boundaries and sufficient surface area for true territorial economic development." [27]

Global Geopark: Global Geoparks are designated by UNESCO and they are single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education and sustainable development. A UNESCO Global Geopark uses its geological heritage, in connection with all other aspects of the area's natural and cultural heritage, to enhance awareness and understanding of key issues facing society, such as using our earth's resources sustainably, mitigating the effects of climate change and reducing natural disasters-related risks.

Group of buildings: The 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage, in its Art. 1, defines groups of buildings as "groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science" [21]

Group of urban buildings: The World Heritage Committee has adopted guidelines concerning the inclusion of groups of urban buildings in the World Heritage List. Paragraph 27 of the Operational Guidelines refers to groups of urban buildings as falling into three main categories - the towns which are no longer inhabited but provide unchanged archaeological evidence of the past, historic towns which are still inhabited (inhabited historic towns) and new towns of the twentieth century

Habitat: According to the UN's CBD, a habitat is the place or type of site where an organism or population naturally occurs.

Habitat/Species Management Area: IUCN defines 'Habitat/Species Management Area' as protected areas aim to protect particular species or habitats and management reflects this priority.

Hamlet/Isolated dwelling in Geopark: A A settlement smaller than a village. In different jurisdictions and geographies, hamlets may have different sizes and be considered a smaller settlement or subdivision of a larger, or be treated as a satellite entity to a larger settlement. [21]

Heritage canals: In the report on the Expert Meeting on Heritage Canals [28] that took place in September 1994 in Ontario, Canada, a canal is a human-engineered waterway. It may be of outstanding universal value from the point of view of history or technology, either intrinsically or as an exceptional example representative of this category of cultural property. The canal may be a monumental work, the defining feature of a linear cultural landscape, or an integral component of a complex cultural landscape. The significance of canals can be examined under technological, economic, social, and landscape factors.

Historic area: According to the 1976 UNESCO Recommendation concerning the Safeguarding and Contemporary Role of Historic Areas, "Historic and architectural (including vernacular) areas" shall be taken to mean any groups of buildings, structures and open spaces including archaeological and palaeontological sites, constituting human settlements in an urban or rural environment, the cohesion and value of which, from the archaeological, architectural, prehistoric, historic, aesthetic or sociocultural point of view are recognized. Among these "areas", which are very varied in nature, it is possible to distinguish the following in particular: prehistoric sites, historic towns, old urban quarters, village and hamlets as well as homogeneous monumental groups, it is understood that the latter should as a rule be carefully preserved unchanged. A management approach is framed also in the Recommendation on HUL [3].

Historic buildings: Even though 'historic buildings' are listed in the heritage categories of UNESCO, there is no official definition regarding the term. However, the word 'historic' does not necessarily address a time limit (age limit) for the recognition of the structure as 'cultural heritage', rather it refers to the inclusion of the structure in the local/national/international listings. Even though different countries define a certain age limit for historic structures, the age of the building is not the only criterion for the inclusion in the listing. In the 1976 UNESCO Recommendation concerning the Safeguarding and Contemporary Role of Historic Areas [29], it is stated that Historic and architectural (including vernacular) areas" shall be taken to mean any groups of buildings, structures and open spaces including archaeological and palaeontological sites, constituting human settlements in an urban or rural environment, the cohesion and value of which, from the archaeological, architectural, prehistoric, historic, aesthetic or sociocultural point of view are recognized. Among these "areas", which are very varied in nature, it is possible to distinguish the following in particular: prehistoric sites, historic towns, old urban quarters, villages and hamlets as well as homogeneous monumental

groups, it being understood that the latter should as a rule be carefully preserved unchanged.

Historic farm: Historic farm buildings are an integral part of the agricultural landscape and an important cultural and economic resource. Some continue to play a part in agricultural production and, increasingly, they have a role in farm diversification as places to live and work. However, they are also a threatened resource. Many have been poorly converted, to the detriment of their historic character and interest. Many more are no longer appropriate for their original purpose and, within the context of a changing rural economy, are becoming redundant and vulnerable to neglect and subsequent demolition. [30]

Historic garden: According to the 1981 Florence Charter [31], a historic garden is an architectural and horticultural composition of interest to the public from the historical or artistic point of view. As such, it is to be considered as a monument. The historic garden is an architectural composition whose constituents are primarily vegetal and therefore living, which means that they are perishable and renewable. Thus, its appearance reflects the perpetual balance between the cycle of the seasons, the growth and decay of nature and the desire of the artist and craftsman to keep it permanently unchanged. The Florence Charter also refers to the Venice Charter and states that the care for monuments in the Venice Charter should be presented for historic gardens as well.

Historic Landscape: Again in the Florence Charter, it is stated that a historic site is a specific landscape associated with a memorable act, as, for example, a major historic event; a well-known myth; an epic combat; or the subject of a famous picture.

Historic towns and villages: According to the Valletta Principles [32], historic towns and urban areas are made up of tangible and intangible elements. The tangible elements include, in addition to the urban structure, architectural elements, the landscapes within and around the town, archaeological remains, panoramas, skylines, view-lines and landmark sites. Intangible elements include activities, symbolic and historic functions, cultural practices, traditions, memories, and cultural references that constitute the substance of their historic value. ICOMOS has the specific sub-committee the International Committee on Historic Towns and Villages (CIVVIH) [33] regarding historic towns and villages.

Historic rural constructions: According to ICOMOS-IFLA Principles Concerning Rural Landscapes As Heritage, rural landscapes as heritage refers to “the tangible and intangible heritage of rural areas. Rural landscape as heritage encompasses physical attributes – the productive land itself, morphology, water, infrastructure, vegetation, settlements, rural buildings and centers, vernacular architecture, transport, and trade networks, etc. – as well as wider physical, cultural, and environmental linkages and settings”[44].

Historic town centres: According to the 1987 ICOMOS Charter For The Conservation Of Historic Towns And Urban Areas, also known as the Washington Charter, historic urban areas, large and small, including cities, towns and historic centres or quarters, together with their natural and man-made environments. Beyond their role as historical documents, these areas embody the values of traditional urban cultures. Today many such areas are being threatened, physically degraded, damaged or even destroyed, by the impact of the urban development that follows industrialisation in societies everywhere.

Historic Urban Landscape: The definition of 'Historic Urban Landscape' is outlined in the Recommendation on the Historic Urban Landscape as "the urban area understood as the result of a historic layering of cultural and natural values and attributes, extending beyond the notion of "historic centre" or "ensemble" to include the broader urban context and its geographical setting." and it is stated that this definition "provides the basis for a comprehensive and integrated approach for the identification, assessment, conservation and management of historic urban landscapes within an overall sustainable development framework" [3].

Human settlements: The characteristics that define human settlements have been variously listed. The categories finalized to a climatic analysis, could be useful in the context of HA identification for natural hazard characterisation. Živković has listed them as: site, location, size, function, form, and structure. [19] **Site** refers to the exact location of where a settlement first started. **Situation** refers to the location of a settlement in relation to the surrounding area. **Size** refers to the number of people living in a settlement or it can refer to the area that settlement occupies. **Function** of the settlement describes all the main activities that occur in it. These can be grouped into a number of headings, such as residential, recreational, retail, government, entertainment, and industrial. **Form** refers to physical characteristics that make up built-up areas, including the shape, size, density, and configuration of settlements. **Structure** describes the spatial arrangement and configuration of elements of streets, blocks, and buildings.

By size, human settlements are **Megapolis** or mega-region: a large urban region that is highly connected and counts more than ten million people. **Megacity:** an urban agglomeration of 10 million people or more. **Urban agglomeration or conurbation:** a central city with neighbouring cities linked to it. **Metropolis:** an important city and the densely populated surrounding areas that are socially and economically integrated with it. **Micropolis:** a growing smaller city. **City:** a large populated urban agglomeration. **Town:** a compactly settled area. **Village or commune:** a rural community a borgo (Italian), **Hamlet:** a small settlement, **Isolated dwelling:** 1 or 2 buildings.

Indicator of the state of conservation: The indicator of the State of Conservation is used to express the level of conservation of heritage assets. It is determined by three key performance indicators are significance, integrity and authenticity [34].

According to the Glossary of World Heritage Terms, the State of conservation reports for natural and cultural properties included in the World Heritage List and the List of World Heritage in Danger are examined by the World Heritage Committee and its Bureau. State

of Conservation reports are by the advisory bodies IUCN and ICOMOS, the World Heritage Centre and States as part of the system of monitoring of World Heritage properties.

Industrial and technical heritage: According to the ICOMOS International Committee for the Conservation of the Industrial Heritage (TICCIH) [35], Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education.

Intangible Cultural Heritage: Intangible Cultural Heritage includes traditions or living expressions inherited from our ancestors and passed on to our descendants, such as oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts [36]. The importance of intangible cultural heritage is not the cultural manifestation itself but rather the wealth of knowledge and skills that is transmitted through it from one generation to the next.

Integrity: According to The Operational Guidelines for the Implementation of the World Heritage Convention, Integrity is a measure of the wholeness and intactness of the natural and/or cultural heritage and its attributes. By considering the range of cultural heritage asset categories, more specifically they refer to: "Building, architectural or technological ensemble or landscape properties; traditional human settlement; the physical fabric of the property and/or its significant features should be in good condition, and the impact of deterioration processes controlled. A significant proportion of the elements necessary to convey the totality of the value conveyed by the property should be included. Relationships and dynamic functions present in cultural landscapes, historic towns or other living properties essential to their distinctive character should also be maintained; bio-physical processes and landform features, Biological diversity and cultural diversity."

Megapolis or mega-region: A group of conurbations, consisting of more than ten million people each. It is generally understood as a specific settlement type that has been consolidated across the "Third World" or the "global South" under conditions of rapid urbanization, hyper-congestion, and resource scarcity.

Memorial: Structures built to preserve the memory of beings or events. For other objects created, issued, or worn to commemorate persons or events, use "commemoratives."

Metropolis (or Metropolitan area): A large major city together with its suburbs and nearby cities, towns, and environs over which the major city exercises a commanding economic and social influence. Sometimes there may be two or more linked cities (Tokyo

– Yokohama Metropolitan Area in Japan) or an agglomeration of metropolitan boroughs (Greater London, England). The population is usually one to three million.

Military Heritage and Fortification: According to the Charter on Fortifications and Military Heritage; Guidelines for Protection, Conservation and Interpretation by ICOFORT (the ICOMOS International Scientific Committee on Fortifications and Military Heritage, which was established by ICOMOS in 2005), military heritage and fortifications comprise of any structure built with either natural (i.e. botanical or geological) or artificial materials, by a human community to protect themselves from assailant, such as: works of military engineering, arsenals, harbors and naval battlefields, barracks, military bases, testing fields, and other enclaves and constructions built or used for military, offensive and defensive purposes. Military cultural landscapes include but not limited to battlefields, territorial or coastal defense installations and earth works and have values similar to other heritage buildings and sites, but also possess unique values that need to be carefully studied, analyzed and preserved.

Monuments: The 1972 UNESCO Convention Concerning the protection of the World Cultural and Natural Heritage, in its Art. 1, defines monuments as "architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science." [21]

Monumental Sculpture: Sculptures of very large size, usually but not always sculpture in the round, often but not always outdoors. For large sculptures of figures of extraordinary size, use "colossi."

Monumental Tree: There are various heritage registrations that focus on trees; these are trees as valuable icons in the landscape or as the largest of their species as a proxy for age [45]

Natural2000 site: Natura 2000 is a network of core breeding and resting sites for rare and threatened species, and some rare natural habitat types which are protected in their own right. It stretches across all 27 EU countries, both on land and at sea.

Natural Heritage: According to the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage, the following shall be considered as "natural heritage":[21] **natural features** consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view; **geological and physiographical formations** and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation; **natural sites** or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty

National Park: IUCN defines 'National Park' as large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for

environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

Natural Monument or Feature: IUCN defines 'Natural Monument or Feature' as areas that protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove.

Natural Site: According to the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage, [21] **natural sites** are precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.

New urban elements to be considered: According to the Research report no. 16, SUI: Sustainable Development of Urban Historical Areas through an Active Integration within Towns, one of three elements that constitute urban heritage is New urban elements to be considered. Examples of these new urban elements are:

- o The urban built form;
- o The open space: streets, public open spaces;
- o Urban infrastructures: material networks and equipment.

The same classification is referred also in the Recommendation on the Historic Urban Landscape.

Non-exceptional heritage elements but present in a coherent way with a relative abundance: According to the Research report no. 16, SUI: Sustainable Development of Urban Historical Areas through an Active Integration within Towns, one of three elements that constitute urban heritage is Non-exceptional heritage elements but present in a coherent way with a relative abundance. The same classification is referred also in the Recommendation on the Historic Urban Landscape.

Prehistoric Sites: According to ICOMOS Open Archive, *Prehistoric Sites* are among the 'heritage typologies'. [42]

Protected area: International Union for Conservation of Nature (IUCN) defines protected area as "a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values" [21].

Protected area with sustainable use of natural resources: IUCN defines 'Protected area with sustainable use of natural resources' as protected areas that conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems.

Protected Landscape/ Seascape: IUCN defines 'Protected Landscape/ Seascape' as protected area where the interaction of people and nature over time has produced an

area of distinct character with significant, ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

Rock Art: According to ICOMOS Open Archive, *Rock Art* are among the 'heritage typologies'. [42]

Sacred Natural Site: Sacred natural sites include areas recognized as sacred by indigenous and traditional peoples and areas recognized by religions or faiths as places for worship and remembrance. They are the world's oldest conservation areas and contain high levels of biological and cultural diversity and often included in ICCAs. They protect a wide variety of habitats, guard traditional customs, practices and knowledge related to biodiversity conservation and promote mutual respect between people and nature [46].

Scientific heritage: According to ICOMOS Open Archive, *Scientific heritage* are among the 'heritage typologies'. [42]

Setting: The setting of a heritage structure, site or area is defined as the immediate and extended environment that is part of, or contributes to, its significance and distinctive character.

Significant personalities (heritage related to-): According to ICOMOS Open Archive, *Significant personalities (heritage related to-)* are among the 'heritage typologies'. [42]

Silent Area: A silent area is an area where the noise nuisance should be so low that the sounds that occur there naturally are hardly disturbed, if at all (stand still principle).

Sites: The 1972 UNESCO Convention Concerning the protection of the World Cultural and Natural Heritage, in its Art. 1, defines sites as works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view.

Strict Nature Reserve: IUCN defines 'Strict Nature Reserve' as a category of protected area "areas set aside to protect biodiversity and also possibly geological/geomorphic features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values."

Underwater Cultural Heritage: As outlined in the Records of the 2001 UNESCO General Conference [38], "underwater cultural heritage" means all traces of human existence having a cultural, historical or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years such as: i. sites, structures, buildings, artefacts and human remains, together with their archaeological and natural context; ii. vessels, aircraft, other vehicles or any part thereof, their cargo or other contents, together with their archaeological and natural context; and iii. objects of prehistoric character.

Urban built form: According to the Research report no. 16, SUI: Sustainable Development of Urban Historical Areas through an Active Integration within Towns, one of three elements that constitute urban heritage is New urban elements to be considered. Examples of these new urban elements are:

- o The urban built form;
- o The open space: streets, public open spaces;
- o Urban infrastructures: material networks and equipments.

The same classification is referred also in the Recommendation on the Historic Urban Landscape.

Urban HA included in Protected area: Historic urban areas, large and small, include cities, towns and historic centres or quarters, together with their natural and man-made environments. Beyond their role as historical documents, these areas embody the values of traditional urban cultures.

Urban heritage: Although the attention on protecting cultural heritage in cities has been attained and integrated in policies especially after the WWII [39], the International conventions and other recommendations also referring to urban conservation, disaster risks and management don't provide an exhaustive identification of urban heritage. On the other side, The *Culture Urban Future* Global Report (2016) has defined the urban heritage as "a European concept at the heart of urban identities". [40] By surveying the Europe, in the Report, Europe clearly appears with its developed urban system that is the output of "a layering process, whereby pre-existing structures were continuously transformed or reused."

Urban Infrastructure: material networks and equipment: Urban infrastructures are urban elements that constitute urban heritage.

Value assessment: In the ICOMOS Guidance on Heritage Impact Assessments for Cultural World Heritage Properties, a value assessment category system (Very High, High, Medium, Low, Negligible, Unknown potential) is defined for categories Archaeology, Built heritage or Historic Urban Landscape, Historic landscape, Intangible Cultural Heritage. See p.13 of the Guidance document.

Vernacular Architecture: According to the ICOMOS Charter On The Built Vernacular Heritage [41], Vernacular building is the traditional and natural way by which communities house themselves. It is a continuing process including necessary changes and continuous adaptation as a response to social and environmental constraints. The survival of this tradition is threatened world-wide by the forces of economic, cultural and architectural homogenisation. How these forces can be met is a fundamental problem that must be addressed by communities and also by governments, planners, architects, conservationists and by a multidisciplinary group of specialists.

Wilderness Area: IUCN defines 'Wilderness Area' as a category of protected area "usually large unmodified or slightly modified areas, retaining their natural character and

influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.”

World Heritage: The heritage assets in the UNESCO World Heritage List. These heritage assets have an Outstanding Universal Value.

9 References

- [1] European Commission, 2018, *Safeguarding Cultural Heritage from Natural and Man-Made Disasters: A Comparative Analysis Of Risk Management in the Eu*. Available at <https://op.europa.eu/it/publication-detail/-/publication/8fe9ea60-4cea-11e8-be1d-01aa75ed71a1/language-it/format-PDF/source-search>
- [2] A. Peer, J. Klerx, et al., 2019, *D6.1 GLOCAL user requirements*, <https://shelter-project.com/documents/scientific-publications-and-deliverables/>
- [3] UNESCO, 2011, *Recommendation on the Historic Urban Landscape*.
- [4] UNESCO World Heritage Centre, 1996, *Information Document Glossary of World Heritage Terms*, Yucatan, <https://whc.unesco.org/archive/gloss96.htm>
- [5] ICOMOS Open Archive (n.d.), *Eprints on Cultural Heritage*, <http://openarchive.icomos.org/view/subjects/H.html>
- [6] UNESCO (n.d.), *UNESCO Thesaurus*, <http://vocabularies.unesco.org/browser/thesaurus/en/>
- [7] R. Tamborrino, et al., 2019, *D6.5. Methodology for Local Knowledge Extraction*, <https://shelter-project.com/documents/scientific-publications-and-deliverables/>
- [8] UNESCO WHC, 2014, *Developing Historic cities. Keys for understanding and taking action*, UNESCO World Heritage Centre, France-UNESCO Cooperation Agreement, p.9. Available on <https://whc.unesco.org/en/news/1153>
- [9] European Committee for Standardization, 2005, *Eurocode 8: design of structures for earthquake resistance. Part 3: assessment and retrofitting of buildings*, Brussels, p. 19. <https://www.phd.eng.br/wp-content/uploads/2014/07/en.1998.3.2005.pdf>
- [10] UNESCO, UNITAR, 2018, *Five Years of Conflict. The State of Cultural Heritage in the Ancient City of Aleppo*, <https://unesdoc.unesco.org/ark:/48223/pf0000265826/PDF/265826eng.pdf.multi>
- [11] L. Mucchi, n.d., *La Carta del Rischio*. Available on <http://www.lorenzomucchi.info/DOCS/LETT/INFCULT/La%20carta%20del%20rischio.pdf>
- [12] A. Egusquiza, A. Gandini, et al., 2020, *D2.2. HA Systemic resilience assessment and monitoring framework*, <https://shelter-project.com/documents/scientific-publications-and-deliverables/>
- [13] Food and Agricultural Organization of the United Nations (FAO), 2020, *“Globally Important Agricultural Heritage Systems” (GIAHS)*, <http://www.fao.org/giahs/en/>.
- [14] CoE, 1992, *Valetta Convention: European Convention on the Protection of the Archaeological Heritage (Revised)*, Brussels. <https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/143>
- [15] CoE- the Committee on Monuments and Sites, 1975, *European Charter of the Architectural Heritage*.
- [16] ICOMOS, 1990, *Charter For The Protection And Management of the Archaeological Heritage*. Available on <https://www.icomos.org/en/practical-information/179-articles-en-francais/ressources/charters-and-standards/160-charter-for-the-protection-and-management-of-the-archaeological-heritage>

- [17] Council of Europe, 1985, *Convention for the Protection of the Architectural Heritage of Europe*, Granada.. <https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/121>
- [18] Getty Foundation, n.d., Art&Architecture Thesaurus https://www.getty.edu/vow/AATFullDisplay?find=monumental+sculpture&logic=AND&no te=&english=N&prev_page=1&subjectid=300400887
- [19] Živković J., 2019, "Human Settlements and Climate Change" in Leal Filho W., Azeiteiro U., Azul A., Brandli L., Özuyar P., Wall T. (eds) *Climate Action. Encyclopedia of the UN Sustainable Development Goals*. Cham, Springer.
- [20] UNESCO (2015), *Recommendation Concerning the Protection and Promotion of Museums and Collections, Their Diversity and Their Role in Society*. Available online <http://www.unesco.org/new/en/culture/themes/museums/recommendation-on-the-protection-and-promotion-of-museums-and-collections/>
- [21] UNESCO, 1972, *Convention Concerning the Protection of the World Cultural and Natural Heritage*, <https://whc.unesco.org/en/conventiontext/>
- [22] UNESCO, n.d., *Cultural Landscape*, <https://whc.unesco.org/en/culturallandscape/#1>
- [23] CoE, n.d., *Council of Europe Landscape Convention*, <https://www.coe.int/en/web/landscape>
- [24] CIIC ICOMOS, n.d., <https://www.ciicicomos.org/en/>
- [25] CoE, n.d., *Cultural Routes*, <https://www.coe.int/en/web/cultural-routes/home>
- [26] ICOMOS, 1979, *Burra Charter*. https://australia.icomos.org/wp-content/uploads/Burra-Charter_1979.pdf
- [27] Goeparks, n.d., *What is a geopark*, http://www.europeangeoparks.org/?page_id=165
- [28] UNESCO, 1994, *Convention Concerning the Protection of the World Cultural and Natural Heritage*, <https://whc.unesco.org/archive/canals94.htm>
- [29] UNESCO, 1976, *Recommendation concerning the Safeguarding and Contemporary Role of Historic Areas*, http://portal.unesco.org/en/ev.php-URL_ID=13133&URL_DO=DO_TOPIC&URL_SECTION=201.html
- [30] P. Gaskell, S. Owen, 2005, *Historic farm buildings: Constructing the evidence base*, English Heritage, the Countryside Agency.
- [31] ICOMOS, 1982, *Historic Gardens (the Florence Charter)*, https://www.icomos.org/charters/gardens_e.pdf
- [32] ICOMOS, 2011, *The Valletta Principles for the Safeguarding and Management of Historic Cities, Towns and Urban Areas*, https://www.icomos.org/Paris2011/GA2011_CIVVIH_text_EN_FR_final_20120110.pdf
- [33] CIVVIH ICOMOS, n.d., *International committee on historic cities, towns and villages*, <http://civvih.icomos.org/>
- [34] S. M. Zancheti, L. T. Ferreira Hidaka, 2012, "An Indicator for Measuring the State of Conservation of Urban Heritage Sites" in ICCROM (ed.) *Measuring Heritage*, Rome.
- [35] TICCIH, n.d., *The International Committee for the Conservation of the Industrial Heritage*, <https://ticcih.org/>
- [36] UNESCO, n.d., *What is intangible Cultural Heritage*, <https://ich.unesco.org/en/what-is-intangible-heritage-00003>
- [37] IUCN, 2014, *What is a protected area?*, <https://www.iucn.org/theme/protected-areas/about>

- [38] UNESCO, 2001, *Records of the General Conference, 31st session, v. 1: Resolutions*. <https://unesdoc.unesco.org/ark:/48223/pf0000124687.page=56>
- [39] Urban Cultural Heritage, n.d., *International conventions on urban cultural heritage*, <https://www.recover-urban-heritage.org/international-conventions-on-urban-cultural-heritage/>
- [40] UNESCO, 2016, *Culture Urban Future: Global Report on Culture for Sustainable Development*. Paris, <https://unesdoc.unesco.org/ark:/48223/pf0000245999>, p. 57.
- [41] ICOMOS, 1999, *Charter On The Built Vernacular Heritage*, Mexico, <https://www.icomos.org/en/participer/179-articles-en-francais/ressources/charters-and-standards/164-charter-of-the-built-vernacular-heritage>
- [42] ICOMOS Open Archive (n.d.), *Eprints on Cultural Heritage*, <http://openarchive.icomos.org/view/subjects/H.html>
- [43] Ellis, N.V., et al., 1996, *An Introduction to the Geological Conservation Review*, Peterborough: Joint Nature Conservation Committee.
- [44] ICOMOS, 2017, *ICOMOS-IFLA Principles Concerning Rural Landscapes As Heritage*. https://www.icomos.org/images/DOCUMENTS/General_Assemblies/19th_Delhi_2017/Working_Documents-First_Batch-August_2017/GA2017_6-3-1_RuralLandscapesPrinciples_EN_final20170730.pdf
- [45] US/ICOMOS, n.d., *Heritage Trees: International Research and Registries*, <https://usicomos.org/heritage-trees-international-research-and-registries/>
- [46] IUCN, 2010, *Sacred Natural Sites, Conserving Nature and Culture*, <https://www.iucn.org/content/sacred-natural-sites-conserving-nature-and-culture>