Interreg CENTRAL EUROPE
ProteCHt2save
European Union
European Regional
Development Fund

DELIVERABLE D.T2.1.2

Definition of transnational concept of cultural heritage vulnerability in changing environment

Final
04 2018

CONTENTS

1. INTRODUCTION

1.1. Objective and scope

In the context of WP T2 C*ultural heritage vulnerability in emergency situations*, activity A.T2.1, which concentrates on the identification of the critical elements which can be subject of improvement in the resilience and risk management of cultural heritage exposed to extreme events, the deliverable D.T2.1.2 aims at discussing the criteria underpinning the definition of transnational cooperation in the field of cultural heritage (CH) protection, with insights on the cross-border strategies adopted in Central Europe and their possible improvement.
This document meets the following objectives:

- To outline the significance of transnational cooperation including its added values and expected impact.
- To identify the standing needs for transnational cooperation in Europe concerning cultural heritage vulnerability and protection.
- To review the existing transnational solutions and tools for CH in Europe.
- To formulate a transnational concept for CH vulnerability in Central Europe, discussing the current issues to be tackled, possible improvements and an optimal framework in which to encompass cross-border activities.

The next section describes the structure of the report.

1.2. Structure of the report

The deliverable D.T2.1.2 *Definition of transnational concept of cultural heritage vulnerability in changing environment* is composed of the following sections: section 2 presents the strategic value and impact of transnational cooperation with particular insights on its application to CH protection; section 3 outlines the main criteria which characterise the definition of the transnational concept for CH vulnerability, discussing the feasibility of a transnational strategy to resilience and risk management of CH assets, including the existing issues that need to be tackled and the possible improvements which could be performed in order to enable the transnational cooperation in the field of cultural heritage protection against climate change and extreme events. Finally, section 5 draws main conclusions on the common challenges experienced in Central Europe for the sake of determining the criticalities which need to be addressed in the context of cultural heritage protection strategies and enforced policies.

2. SIGNIFICANCE OF TRANSNATIONAL COOPERATION

According to the European Commission, transnational cooperation aims to promote better participation and regional development within the Union by a joint approach to tackle common issues. It encourages highly integrated partnerships impacting beyond national boundaries in a transnational cooperation area [EC 2018, a]. Such partnerships engage usually different levels of government and administration, embracing both public and private-sector bodies and different policy areas. Transnational programmes result therefore in the creation of an additional dimension to regional

development, leading to agreed priorities and a coordinated strategic response. This chapter discusses the strategic value as well as the impact of transnational cooperation in the context of the EU, presenting examples of European transnational cooperation strategies and tools active in the field of cultural heritage protection.

2.1. Value and impact of transnational cooperation

Transnational cooperation represents a fundamental tool for pursuing the objectives of EU policies in priority areas, such as environmental, transport, energy, social, and macro-regional strategies. Fostering the formation of multi-stakeholder partnerships to jointly address the common challenges and opportunities enables overcoming regional disparities as well as strengthening cross-border cohesion, macro-regional economies and sharing of technical knowledge. More specifically, the strategic value of transnational cooperation may be summarised as follows [Interreg 2018, a]:

- **Reduction of regional disparities and increase of cohesion in specific territories**: transnational cooperation supports the exchange of knowledge among different areas, in terms of methods of analysis and solutions to shared problems, thus providing help to disadvantaged regions and resulting in capacity building.
- **Building of trust across borders and supporting European integration**: cooperation zones, which usually share similar challenges and cultures, constitute the natural scale at which effective partnerships can be built hence facilitating trust-building and durable collaboration.
- **Endorsing macro-regional strategies**: transnational cooperation aims at providing targeted solutions designed for the specific regions, bridging hence gaps between national and EU-wide actions.

Hörnström et Al. [Hörnström et Al. 2012] individuate four types of 'added value' which can derive from territorial cooperation initiatives. These include:

- **Organisational and policy learning**: transnational partnerships explore new terrain and test new approaches to adequately face the challenges and opportunities posed by the huge structural changes in Europe. The first 'added value' of territorial cooperation thus emerges from learning and dissemination processes in which stakeholders are enabled to frame common issues in a territorial perspective, learning to work at new scales and in new types of networks. This allows regions to stay ahead of developments, spreading know-how and enhancing competitiveness.

- **Solutions to common problems**: transnational and cross-border cooperation presents a second added value, embodied by the effort of finding solutions to common problems. This encourages the engagement of local and regional actors and it mobilizes political participation. Climate changes, pollution or cross border transport systems, for example, pose challenges which are similarly experienced over large territories; these can be hardly tackled by regions separately but necessitate a tailored coordination with neighbouring areas.

- **Generating critical mass**: territorial cooperation has the added value of ensuring economies of scale and the achievement of critical mass. The pooling of resources required to create common potential in a specific area is for example of extreme importance in sparsely populated areas.

- **Building transnational structures for future cooperation and further cohesion**: cross-border or transnational cooperation allows the formation of administrative and institutional structures which define a reference framework for building future cooperation and strengthening

cohesion of a transnational area. These structures are important added value aspects of cooperation as they facilitate continuity of the lessons learned from previous projects and other cooperation forms. They also bring in the territorial dimension in light of strengthening cohesion of the area and addressing issues that are territorial in nature.

Additionally, past experience from transnational cooperation evidenced a positive impact on the feasibility and sustainability of cross-border tools and strategies, as well as on the appropriate allocation of resources. The observed cost-efficiency of transnational project favours in fact the uptake of current best-practice approaches, facilitating a wise use of public resources in the region. Furthermore, the innovative solutions and methodologies proposed are shown to be easily scaled-up, accelerating the dissemination of results to larger spatial contexts as well as the testing of the effectiveness of their application. Transnational cooperation projects often demonstrate their feasibility and long-term impact, delivering their full potential only years after a project has ended. They often act as catalysts to kick-start changes whose reach and momentum keep growing over time, as they stimulate significant national and international investment and action.

2.2. Transnational cooperation for CH protection in Europe

Among the wide spectrum of topics which have been addressed by transnational cooperation, increasing efforts in the recent years have been devoted to tackling the problem of CH risk prevention, mitigation and recovery in disaster situations. In this perspective, a comprehensive study published in 2007 [Drdácký et Al. 2007] emphasised a number of aspects on which European transnational cooperation in the field of cultural heritage protection should concentrate:

- **Awareness raising.** Gathering, evaluating and disseminating best practice examples as well as bad ones in order to exploit the full potential of experiences of Member States in the perspective of defining an appropriate CH protection strategy.
- **Investing in preventive, mitigation and preparedness measures**. Both structural and non-structural approaches allow space for innovative solutions, techniques and for breakthrough concepts and these should be pursued. The specific features of certain natural hazards require preventive measures to be developed and adopted in a harmonized way by several European countries. On the non-structural level, bilateral or multi-lateral agreements are needed, managed by a coordination process.
- **Identifying and marking stock at risk**. Lack of appropriate knowledge related to the cultural heritage stock at risk is one of the most widely mentioned drawbacks and shortcomings in relation to effective protection of cultural heritage against natural and man-made hazards. In this perspective appropriate mapping should be developed.
- **Research funding**. European collaborative research in the field of protecting cultural heritage from natural disasters and climate change plays a decisive role and is essential for the implementation of successful measures addressing natural hazards and their consequences.
- **Education and training.** European cooperation is necessary in educating and training professionals to participate in coordinated actions. For specific cultural heritage assets, rescue tasks, good supervision and in situ decision making by specially trained professionals could surely reduce losses due to inappropriate interventions.
- **Cost-effective capacity building.** Awareness, public education, systems and facilities that provide advice are proved methods for reducing cultural heritage losses. European information systems and a European database, together with innovative use of available means of communication can greatly enhance overall preparedness and operability in emergency situations.
- **Exchange of knowledge & experience**. Non-structural standards and harmonized European recommendations focusing on a range of problems, from data collection, damage assessment

and evaluation, inventory and mapping of hazards and stock at risk to the creation of thematically-oriented Geographic Information Systems, warning systems and similar management tools, is highly required in order to make progress in combating natural disasters. These standards would further support the development of technical standards for prevention and mitigation of damage from individual or multiple hazards.

- **Strengthening resources & equipment.** Substantial reserves for financial support for both preventive and remedial measures lie in the new European insurance policy toward cultural heritage and natural disasters. Again, non-market value assessment and damage valuation established as a standard procedure would be a major contribution, as would tools for insurance rates based on probabilistic models of disaster occurrence. Within the programme for building a European research infrastructure, it might be possible to support laboratories equipped with mobile devices that can serve in emergency situations. As has been previously mentioned, it is also very important to include climate change issues, which have the character of a long-term continuous natural hazard with fatal consequences for many elements of cultural heritage.

2.2.1. Transnational solutions and tools for CH

Many transnational cooperation solutions and tools have been developed and implemented at European level for the protection of cultural heritage assets. These stem out from the specific needs in this sector, briefly outlined above. Among the most significant tools for CH, the following should be underlined:

1) **Integrated emergency units.**
   a. Established in 2001 and reformed in 2013, the ***EU Civil Protection Mechanism*** [EC 2018, b] fosters cooperation among national civil protection authorities across Europe. The operational hub of the Mechanism is the Emergency Response Coordination Centre (ERCC) which monitors emergencies and coordinates the response of the participating countries in case of a crisis. The Mechanism also provides partners with emergency communications and monitoring tools, through the Common Emergency Communication and Information System (CECIS), a web-based alert and notification application and the opportunity to train their civil protection teams. Integral to the Mechanism is a voluntary pool of resources which brings together specialized emergency response capacities by Participating States for emergency response. This allows for a more predictable, faster and reliable EU response to disasters.
   b. ***Local cross-border civil protection partnerships***. A number of bi-lateral or multi-lateral pilot projects have been funded in 2006 aimed at raising awareness and providing a framework for closer cooperation in civil protection in the fields of cross border early warning, coordination and logistical tools with a view to preventing or at least minimizing the consequences of natural disasters.
   c. ***Blue Shield*** consists of a network of organizations dealing with museums, archives, audio-visual supports, libraries, as well as monuments and sites. The mission is to work for the protection of the world's cultural heritage. In support of the international initiative from Blue Shield on a local level a number of national committees of the Blue Shield (NCBS) are formed. Its main activities include collecting and sharing information on threats to cultural property, raising public awareness about damage to cultural heritage, promoting good standards of risk management, providing professional expertise to help meet emergencies, identifying resources for disaster prevention and for rapid intervention in emergencies.

2) **Digital tools and information systems for risk mitigation.** Digital tools and Information Management Systems endorse a series of activities related to cultural heritage protection, such as documentation, inventorying, management strategies, monitoring, and reporting. These represent an essential tool for prevention, mitigation and recovery from natural disasters and are proven to be effective and very flexible, adapting to the national legislation, regional policies, and the local needs. A few examples of digital tools specifically developed for CH protection include:
    a. ***ResCult Database***: The European Interoperable Database (EID) for CH is designed to provide a unique framework for Civil Protection operators and international Authorities operating in Cultural Heritage field (Ministries, European Union (EU), UNESCO, Etc.) and a supporting decision tool to understand the risk of damage to Cultural Heritage in case of natural disasters, as well as the related impacts on social cohesion, sustainable cultural tourism and engagement with local communities in protecting the environment [ResCult 2017]. It helps in developing a disaster risk reduction strategy according to Sendai Framework principles identifying tailored actions and investments to improve both prevention and resilience capacities. In particular, the EID structure supports the following features:
        - European Heritage Map based on EU Standards for geo-spatial data harmonizing and sharing (ex. INSPIRE), supporting core information (typology, economic value, materials, vulnerability, procedures for recovery/movement, actions to be avoided, operational decision tools, etc.);
        - Cadastre of happened disasters with evaluations about affected items, prevention measures, operations and results, direct or indirect financial losses and social consequences (also for examining cost-benefits issues of risk prevention measures);
        - Risk scenarios monitoring and modelling in specific disasters, identifying risk factors, vulnerability and priorities to orient prevention strategies;
        - Advice-Seeking and good-practice sharing for specific disasters scenarios;
        - Crowd-data acquiring from citizens and stakeholders, helpful to establish priorities according to Cultural Heritage assets-related belonging feeling or social issues;
        - 3D models to help finding/recognizing dispersed artworks/art pieces, support restoration in post-emergency and preserve the “digital memory” in case of destruction or damage.
    b. ***Copernicus Emergency Management Service*** *(Copernicus EMS)* provides information for emergency response in relation to different types of disasters, including meteorological hazards, geophysical hazards, deliberate and accidental man-made disasters and other humanitarian disasters as well as prevention, preparedness, response and recovery activities [Copernicus 2015]. The Copernicus EMS is composed of an on-demand mapping component including the provision of rapid maps for emergency response and risk & recovery maps for prevention and planning and of the early warning and monitoring component which includes systems for floods, droughts, and forest fires.
    c. ***Other European early warning and risk management tools.*** The European Commission has developed near real-time alert systems for the EU Civil Protection Mechanism's participating states with the aim of getting better equipped to monitor natural disasters and improving early warning communication. Cooperation across the European Commission has facilitated the development of disaster forecasting and disaster management tools [EFAS 2018, EFFIS 2018, GDACS 2018, Meteoalarm 2018, EMSC 2018], such as:

- The European Flood Alert System (EFAS) monitors and forecasts floods across Europe. alerting the Emergency Response Coordination Centre (ERCC) on the most severe flood events
- The European Forest Fire Information System (EFFIS) provides daily meteorological fire danger maps and forecasts up to six days before, including maps of burnt areas and damage assessment.
- The Global Disaster Alerts and Coordination System (GDACS), developed by the Commission's Joint Research Centre, is a fully automatic 24/7 alert system which gathers data about natural events (earthquakes, tsunamis, tropical storms, floods and volcanoes).
- Meteoalarm is an online alert platform established by the European meteorological services, which issues European weather warnings.
- The European Mediterranean Seismological Centre (EMSC) allows earthquake detection in the Mediterranean area to be considerably quicker and accurate, by adding sensors in Tunisia.

3) **Transnational research funding schemes for cultural heritage protection.** Research into strategies, methodologies and tools is needed to safeguard cultural heritage against continuous decay. Before irreversible damage is done, concerted actions, based on sound science, are needed to protect, strengthen and adapt Europe's unique cultural patrimony. A concerted research action is needed to allow Member States to maximize and exploit at best their research efforts. Joint Programming provides a framework within which Member States address jointly areas where public research programs can respond to major societal challenges [Aymerich 2015]. The transnational research and innovation projects effectively address local issues related to CH protection. Throughout the years many transnational research activities have produced significant outcomes in term of structural and non-structural solutions for prevention, risk reduction and recovery. Among the most relevant research funding schemes for transnational cooperation in the field of cultural heritage, the following can be underlined:
   a. ***Horizon 2020*** [EC 2018, c] is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) which supports heritage-related research in three pillars of the program: Excellent Science, Industrial Leadership, and Societal Challenges. Particular emphasis is placed on the development of converging technologies for preservation and restoration, as well as on multidisciplinary research and innovation for innovative methodologies, products and services for the preservation of cultural heritage assets. As such, Horizon 2020 aims at further reinforcing the EU's position as leader in the field of cultural heritage preservation, restoration and valorisation.
   b. ***Interreg Europe*** [Interreg 2018, b] helps regional and local governments across Europe to develop and deliver better policy. It is financed by the European Regional Development Fund. Any actions developed with financial support from Interreg Europe must fall into one of the following four categories: research and innovation, SME competitiveness, low-carbon economy and environment and resource efficiency. The Interreg Europe Programme provides support to the protection and development of cultural heritage as part of the environment and resource efficiency theme. Interreg Europe exists to assist three types of beneficiaries: public authorities (local, regional and national); managing authorities/intermediate bodies in charge of the Investment for Growth and Jobs programmes or European Territorial Cooperation; agencies, research institutes, thematic and non-profit organisations.
   c. ***Joint Programming Initiative in Cultural Heritage and Global Change (JPI CH)***.The main objective of JPI CH is to promote the safeguarding of cultural heritage in its

broader meaning including tangible, intangible and digital assets. The JPI CH promotes a joint multidisciplinary approach to cultural heritage sustainability which arises from research. It develops within a multi-frame scenario called the Scientific Cultural Area – as a part of the European Research Area – which includes science, engineering, technology, art, literature, conservation and culture. Supporting research activities and researcher training means reaffirming the European cultural identity as worldwide ambassador of cultural heritage excellence.

4) European technical committees and supporting documents

A number of transnational cooperation activities in the field of cultural heritage concentrate on networking, training and knowledge sharing. Different technical groups in Europe bring together professionals active in a special branch of cultural heritage protection whose objective is to produce recommendations and technical guidelines which can be then used by different stakeholders. Some examples include:

a. ***COST Actions*** are bottom-up science and technology networks, open to researchers and stakeholders with duration of four years. They are active through a range of networking tools, such as workshops, conferences, training schools, short-term scientific missions (STSMs), and dissemination activities.
b. ***Legislative Support Task Force***. Composed of international experts, is competent to deal with legal frameworks, procedures, administrative directives, divided laws, sub-laws, policies, strategies, and their implementation, codes of good practice on the state of the art, in reference to the European standards related to the protection of the cultural and natural heritage [Pickard 2002]. The Task Force may also consider related problems of administrative organisation and associated policy procedures and, as appropriate, heritage funding where this is linked to legal and administrative protection mechanisms. Similarly this competence extends to matters concerned with the movable heritage in order to ensure democratic conditions for the protection of and access to historic objects and to facilitate appropriate regulation methods concerning the circulation of such objects and their removal from national territory.
c. ***Working Party on Civil Protection (Prociv)***. The Working Party on Civil Protection [EC 2018, d] handles work on issues relating to: the prevention of, preparedness for and response to natural and manmade disasters, such as floods, forest fires and earthquakes (inside and outside of the EU); issues concerning mutual disaster assistance between EU member states; cooperation on the protection of European critical infrastructure; strengthening chemical, biological, radiological and nuclear security in the EU.
d. ***Technical codes and guidelines***. Among others, these include:
    - EU CHiC Iceberg documentation guidelines. These guidelines [EU-CHIC 2009] required for the efficient compilation and storage of data, pertinent to each asset and structure under observation. The EU-CHIC system has a potential to support sustainable maintenance, preventive conservation and the rehabilitation of historic sites and monuments. It can assist in the application of newly developed strategies that will be designed to evaluate efficiency, and be user-friendly in their approach. It enables screening, and monitoring over time, progressive changes to the physical heritage as a result of recurring human interventions and environmental impacts.
    - Guidelines issued by international and intergovernmental organization as ICOMOS or ICCROM, for example *Risk Preparedness: A Management Manual for*

World Cultural Heritage, which is applicable for all historic assets [Stovel 1998].

- Guidelines and recommendations resulted from international or bilateral research projects focused on protection of cultural heritage or mitigation of climate change impact and related disastrous phenomena. [NOAHS ARK 2007, CHEF 2010]

3. TOWARDS A TRANSNATIONAL CONCEPT FOR CH VULNERABILITY IN CENTRAL EUROPE

Central Europe, as identified by the European Commission, is a vast region which involves nine Member States, including all regions from Austria, Croatia, the Czech Republic, Hungary, Poland, Slovakia and Slovenia, as well as eight Länder from Germany and nine regions from North-East Italy. It presents a large number of assets which face numerous challenges in various fields affecting regional development. In this context, it is undoubted that transnational cooperation represents a catalyst for implementing smart solutions which answer to regional challenges in different fields, such as innovation, low-carbon economy, environment, culture and transport, while building regional capacities following an integrated bottom-up approach involving and coordinating relevant actors from all governance levels.

The concept of transnational cooperation in central Europe finds its application in the Interreg programme CENTRAL EUROPE [Interreg- Central Europe 2015] which supports regional cooperation among central European countries. In the current programming period 2014-2020, under the Priority axis 3 'Cooperating on natural and cultural resources for sustainable growth in CENTRAL EUROPE', the programme responds to the need for protecting and sustainably using natural and cultural heritage and resources, which are subject to increasing environmental and economic pressures as well as usage conflicts. Heritage and resources indeed constitute valuable assets of central European regions and represent important location factors benefitting regional development. More specifically objective SO 3.2 of the programme (i.e. ´To improve capacities for the sustainable use of cultural heritage and resources´) considers transnational cooperation as a vital mean for improving capacities of the public and private sector dealing with the protection and sustainable use of cultural heritage and resources by supporting integrated approaches. This allows for coordinating the preservation and management of cultural heritage and resources with sustainable growth. The development and implementation of strategies and policies for valorising cultural heritage and exploiting potentials of cultural and creative industries is expected to trigger economic opportunities and employment at regional level. Major benefits evidenced by participants in past projects concerning cultural heritage protection include: the preservation of relevant heritage, the endorsement of regional development, the support to innovation and the improvement of cooperation by means of broad international collaboration and exchange of experiences [Central Europe Programme 2014].

In order to exploit the full potential of cooperation among Central European partners, a transnational concept for CH vulnerability is required. For the sake of establishing an adequate framework which could help defining a transnational concept for CH vulnerability in Central Europe, current issues and challenges which could undermine and prevent such concept for being implemented in practice are discussed as well as feasible solutions.

3.1. Current issues to be tackled

Recalling the main findings identified in the deliverable D.T2.1.1, the challenges and barriers to an effective cross-border CH protection strategy in Central Europe can be outlined at three different levels, namely site, region and country. The most relevant issues evidenced in this report involve the following aspects:

a) Lack of appropriate procedures related to the risk management such as decision support tools.
b) Lack of data about the cultural heritage assets and their location, condition and values.
c) Lack of funds or limited accessibility to financial resources.
d) Lack of knowledge.
e) Property status issues.
f) Problems with regulations
g) Lack of coordination among stakeholders
h) Harshening of hazard levels.
i) Low resilience awareness and lack of historic environment resilience supporting approach.
j) No transnational resilience and risk management of cultural heritage exposed to extreme events experience.

The last point evidenced above represents obviously the most troubling aspect which affects the full development of the potential of cross-border policies. The lack of an integrated translational resilience approach to cultural heritage protection in Central Europe is explained by a number of drawbacks of current practices and local procedures varying from divergences in technical and legal frameworks to differences in the availability of resources and expertise as well as language barriers which might compromise the sharing of specific documentation related to cultural heritage. In particular, in the perspective of a possible framework of transnational resilience and risk management of cultural heritage exposed to extreme events, the following issues can be highlighted:

- There are differences in the recognition of the national heritage artefacts or sites resulting from various cultural background and various regulations.
- Although there exist principles which are broadly accepted and implemented, technical standards and legal regulations might differ among Central European countries such as for example compensation regulations or criminal and financial responsibilities.
- Moreover, different levels of equipment, training and of expertise could cause problems for the transnational cooperation in the protection of cultural heritage.
- Finally, documents and records, particularly at local and regional scales, are usually drafted in a language other than English inducing a communication barrier which prevents knowledge sharing and information processing at a Central European level.

3.2. Possible improvements

Overcoming the barriers and challenges to transnational cooperation in the field of CH protection in Central Europe necessitates a shift in the conception of what cultural heritage is and is not as well as adjustments in the legal and funding systems currently enforced. Possible improvements include a series of measures that can endorse mutually beneficial cooperation among partners. The possible improvements and their feasibility are discussed below.

Updated approach to the concept of cultural heritage. Different cultural and political backgrounds among Central European partners may influence the way cultural heritage assets are recognised and hence protected. The diverse values of heritage can in fact underpin the divergence in national cultural heritage protection frameworks and pose considerable obstacles to transnational cooperation.

It is necessary therefore to re-think the concept of cultural heritage as a ´floating 'one, flexible enough to include also less traditional areas of heritage (i.e. local building techniques, intangible heritage etc.). Nevertheless the concept should be at the same time well defined and presenting limits or what it should be considered or not. This is very relevant in the perspective of allocating resources to heritage collection and preservation may be overstretched by the progressive broadening of heritage definitions [EENC 2013].

Harmonisation of the dissonant legal protection systems through participatory processes. It has been observed that a number of EU Directives that become incorporated into national legislations have produced to a greater or lesser extent, a detrimental effect on the sustainable preservation of the cultural heritage. Indeed, an increasing amount of the national legislation is superseded by new building regulations, energy regulations, purchasing regulations, etc. In many cases such legislations enforce for example the use of materials and techniques that are not compatible with the authenticity and structure of historic buildings. Additionally, often national cultural heritage authorities are not included in hearings or reviews in the national administrations prior to incorporation into national legislation. This is a major issue as it leaves the national cultural heritage authorities without influence over the final wording or possible exemptions in the final national legal texts. In order to prevent or overcome these problems, it is therefore necessary to be actively involved in the decision making process in Brussels and at the national level implementing effective participatory processes. The legal issue is only partly related to the problems of disasters but nevertheless important for general transnational concepts [Guštin et Al. 2010].

Enhance digitalization of CH related data in order to capitalize on the available auto-translating, multi-lingual tools. Effective risk management is dependent on the availability of correct and as much as possible complete data on cultural heritage assets. Data collection and their digitization in relation to other existing information systems must be a subject of future improvements. A reasonable degree of standardization will facilitate cross border exchange of data and experience. In this context, it must be mentioned that effective resilience of heritage assets and communities living in historic areas affected by disastrous events can be enhanced only on condition that such communities have sufficiently informative history. The lack of such history is usually one of the most negative characteristics in the areas and communities with heritage assets. Therefore, gathering data on impact of disasters on cultural heritage in a standardize form will be also fruitful. [EC 2018, e]

Exploit differences in expertise to create integrated and complementary technical units. Preventive as well as post disaster measures of cultural heritage require participation of professionals with special expertise and such staff need not be available in affected regions or even countries. This is another potentially very fruitful aspect of transnational concept of cultural heritage vulnerability.

Implement ´sharing' policies of equipment based on well-established collaborative consumption models. Divergences in the availability of equipment may beneficially be addressed by the adoption of information technology platforms that provide individual Central European partners with information, enabling the optimization of the employment of resources through the mutualisation of excess capacity in goods and services. The basic idea behind shared economy models is that when information about goods is shared (typically via an online marketplace) the value of those goods may increase for the community and for society in general. This sharing model could involve adjustments to the current pooling of resources provided for in the EU Civil Protection mechanism presented in section 2.2.1.

Other issues mentioned in the paragraph 3.1 are subject of future deliverables of the ProteCHt2save project, especially of the decision support tools for vulnerability assessment (D.T.2.1.3).

3.3. Definition of an optimal transnational framework in Central Europe

Considering the larger European scale, Central Europe can be seen as characterized by rather unified environmental, climate and socio-economic contexts, with cultural heritage assets made of similar materials and using similar technologies. Large cross-border river catchments, continuity in landscape types, weather conditions and phenomena generate common disasters. Therefore, there is a good reason to deal with a possibility of creating an optimal transnational framework for cultural heritage vulnerability in changing environment. A unified approach will enable exploitation of experience, tools and methodologies acquired or developed in individual Central European countries and will enhance disaster mitigation planning in Europe.

Vulnerability assessment requires a systematic multidisciplinary approach based on availability of geographical, technical, environmental, economic, management and societal data and resources. The following points constitute valid elements for the establishment of an integrated transnational framework in Central Europe concerning CH vulnerability:

1) The **geographical data** including geographic position, geomorphology, identification of risks are mostly available on transnational systems described above, e.g. Copernicus CEMS. Minor deficiencies need to be improved, however the systems exists and can be exploited.
2) For gathering **technical data** which physically describe cultural heritage assets under threats a methodology of surveying, inspection and categorization of cultural heritage objects is suggested. It is based on the material and structural capability to resist exceptional loads and environments during disastrous situation. The detailed procedures are presented in the multilingual Deliverable D.T2.1.3. Vulnerability categories take into account regional diversities of immovable cultural heritage. They further study physical conditions of the object and create an important datum for the existing European or global systems. This methodology obeys an agreed non-standard procedure in order to gather data necessary for vulnerability assessment.
3) The categorization of cultural heritage assets is completed with **identification of controllable criticalities and recommendations for adoption of measures** reducing risks, damage or loss of cultural heritage and enhancing its resilience. The details are delivered in the Deliverable D.T.2.2.2.
4) **Environmental data** are naturally transnational and they are provided without any border limitations.
5) The **economic data** are usually difficult to gather even in individual countries. However, for a success of any transnational approach to vulnerability assessment, and also other disaster preparedness or recovery, the economic data are viable. Recent studies confirmed an urgent need for gathering economic data together with other data on disasters; therefore, this requirement is a part of the transnational approach.
6) Societal aspects need to be supported by education and awareness rising of public, engagement of NGO organisations, youth organisations and similar. Importance should be given to creation of strong conditions for enhanced resilience.
7) **Transnational management** of risk is a common approach in Europe in emergency situations. It is not common that it concerns cultural heritage protection and safeguarding. Therefore, the cross border risk management should be enlarged with cultural heritage items and the rescue teams appropriately trained.

The transnational framework for CH vulnerability should be indeed a flexible one, avoiding excessive, strict standardisation but allowing for synergetic alliances among partners. Legal, operational, funding and cultural diversities among cross-border regions should be adequately accommodated.

4. CONCLUSIONS & RECOMMENDATIONS

The present deliverable reviews the **most relevant elements for the transnational concept** of cultural heritage vulnerability in changing environment, including its **added values** and **expected impact**. It presents existing European and global instruments exploitable for such an approach next to problems and shortcomings identified by project partners. Possible important **improvements** are presented, including:

-an updated approach to the concept of cultural heritage;

-harmonisation of the dissonant legal protection systems through participatory processes;

-enhancement of digitalization of CH related data in order to capitalize on the available auto-translating, multi-lingual tools;

-exploitation of differences in expertise to create integrated and complementary technical units;

-implementation of ´sharing' policies of equipment based on well-established collaborative consumption models.

The transnational concept of cultural heritage vulnerability in changing environment is considered as a realistic and useful approach, still supported with several European or global systems. There are suggested new elements suitable for **transnational application** and dealing with lacking categorization of cultural heritage objects. The **categorization** will serve to application of preparedness measures and enhanced resilience procedures.

The transnational cooperation characteristics and the proposed framework for the Central European region outlined above provide deeper insights on the feasibility and effectiveness of cross-border strategies in the area, concerning CH protection and vulnerability assessment, and add new elements for the development of other activities of the proteCHt2SAVE research project as well as for other deliverables of WP T2.

5. REFERENCES

-Aymerich, M. (2015). Towards an integrated approach to funding cultural heritage for Europe. Available at: http://www.europanostra.org/wp-content/uploads/2017/04/2015-FundingCulturalHeritage-EIB.pdf. Accessed on 18.04.2018.

-Central Europe Programme (2014).Project Stories from the CENTRAL EUROPE Programme- Cultural Heritage and Creative Resources, Central Europe Programme, Vienna, Austria. Available at: https://www.interreg-central.eu/Content.Node/discover/6-cultural-final.pdf. Accessed on 25.04.2018.

-CHEF (2010). Cultural heritage protection against Flood. Available at: https://cordis.europa.eu/project/rcn/84083_en.html. Accessed on 24.04.2018.

-Copernicus (2015). Copernicus Brochure, Publications Office of the European Union, Luxembourg, ISBN 978-92-79-45666-4.

- Drdácký, M., Binda, L., Herle, I.,Lanza, L.G., Maxwell, I., Pospíšil S. (2007). Protecting the cultural heritage from natural disasters, European Parliament, Brussels. Available at: http://www.europarl.europa.eu/activities/expert/eStudies.do?language=EN. Accessed 18.04.2018.

-EC (2018, a). Interreg B - Transnational cooperation, Available at: http://ec.europa.eu/regional_policy/en/policy/cooperation/european-territorial/trans-national/. Accessed on 18.04.2018.

-EC (2018, b). EU CIVIL PROTECTION, ECHO factsheet, EC. Available at: http://ec.europa.eu/echo/files/aid/countries/factsheets/thematic/civil_protection_en.pdf. Accessed 18.04.2018.

-EC (2018, c). Horizon 2020. Available at: https://ec.europa.eu/programmes/horizon2020/. Accessed on 23.04.2018.

-EC (2018, d). Working Party on Civil Protection (PROCIV). Available at: http://www.consilium.europa.eu/en/council-eu/preparatory-bodies/working-party-civil-protection/. Accessed on 23.04.2018.

-EC (2018, e). Safeguarding Cultural Heritage from natural and Man-Made Disasters- A comparative analysis of risk management in the EU.

-EENC (2013). Challenges and Priorities for Cultural Heritage in Europe: Results of an Expert Consultation.

-EFAS (2018). European Flood Awareness System. Available at: https://www.efas.eu/. Accessed on 20.04.2018.

-EFFIS (2018). European Forest Fire Information System. Available at: http://effis.jrc.ec.europa.eu/. Accessed on 20.04.2018.

-EMSC (2018). European Mediterranean Seismological Centre. Available at: https://www.emsc-csem.org/#2. Accessed on 20.04.2018.

-EU-CHIC (2009). European Cultural Heritage Identity Card. Available at: http://euchic.eu/images/uploads/CHICbrosuraWEB.pdf. Accessed on 24.04.2018.

-GDACS (2018). Global Disaster Alerts and Coordination System. Available at: http://www.gdacs.org/. Accessed on 20.04.2018.

-Guštin, M., Nypan, N. (2010). Cultural Heritage and Legal Aspects in Europe, Annales Mediterranea, Institute for Mediterranean Heritage and Institute for Corporation and Public Law Science and Research Centre Koper, University of Primorska, Slovenia.

-Hörnström, L., Smed Olsen, L., Van Well, L. (2012). Added Value of Cross-Border and Transnational Cooperation in Nordic Regions, NORDREGIO WORKING PAPER 2012:14, Nordregio, Sweden.

-Interreg (2018, a). 10 Things to Know About Transnational Cooperation, Interreg.

-Interreg (2018, b). Interreg Europe. Available at: https://www.interregeurope.eu/. Accessed on 23.04.2018.

-Interreg- Central Europe (2015). CITIZEN'S SUMMARY- Annex D. Available at: https://www.interreg-central.eu/Content.Node/documents/Citizen-s-summary-published.pdf. Accessed on 25.04.2018.

-Meteoalarm (2018). Meteoalaem. Available at: http://www.meteoalarm.eu/. Accessed on 20.04.2018.

-NOAHS ARK (2007). Final Report Summary - NOAHS ARK Global climate change impact on built heritage and cultural landscapes. Available at: https://cordis.europa.eu/result/rcn/47770_en.html. Accessed on 24.04.2018.

-Pickard, R (2002).European Cultural Heritage, Volume 1, Council of Europe Publishing, 2002.

-ResCult (2017). Increasing Resilience of Cultural heritage: a supporting decision tool for the safeguarding of cultural assets, Presentation October 2017. Available at: https://www.rescult-project.eu/site/assets/files/1019/rescult_project_-_public_presentation_20_oct_2017.pdf. Accessed on 20.04.2018.

-Stovel, H. (1998). Risk Preparedness: A Management Manual for World Cultural Heritage, ICCROM, Rome.