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Safeguarding Cultural Heritage through Technical and Organisational Resources Management

D11.1: Project viability analysis

STORM Project

H2020- DRS-11-2015: Disaster Resilience & Climate

Ethical/Societal Dimension Topic 3: Mitigating the impacts of climate change and natural hazards on Cultural Heritage sites, structures and artefacts

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4	Technological Educational Institute of Piraeus	TEIP	GR
5	Resiltech	RESIL	IT
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10	Ministero degli Interni – Corpo Nazionale Vigili del Fuoco	CNVVF	IT
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Definitions and Acronyms

Acronyms	Description
CH	Cultural Heritage
CIPE	Comitato Interministeriale per la Programmazione Economica (IT)
EUROMED	Euro-Mediterranean partnership
GDP	Gross Domestic Production
IAP2	International association for public participation
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
ICOMOS	International Council on Monuments and Sites
MIBACT	Ministry of cultural heritage, cultural activities and tourism (IT)
NGO	Non Profit Organizations
PESTLE	Political, Economic, Social, Technical, Legislative, Eco compatibility Analysis
PON	National Objective Plan (IT)
PUDF	Plan for the Use and Dissemination of Foreground
SWOT	Strengths, weaknesses, Opportunities, Threats Analysis
UNESCO	United Nations Educational Scientific and Cultural Organisation

For further definitions and acronyms please see the official STORM glossary at:

https://drive.google.com/open?id=0B5_lcxHSqyOhbTR3RWNZc0dxb1U

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Executive Summary

The main purpose of this document is to track a path to support STORM project viability.

After a project brief description (common to other deliverables), dedicated to people who are reading this document separated from all the other project deliverables, the following parts start with principles identification in chapter 2. An overall definition of the surrounding context is provided through the PESTLE analysis carried on at European level as well at each pilot country level. A summarising view is provided to evidence key factors that could condition STORM viability.

In the following chapter the SWOT analysis is provided considering the project as a whole; detailed analysis will be provided in D11.2 related to each PUDFs. In chapter 5 a method to monitor viability during the project life is provided and it will be in place starting from M13.

A key factor for STORM viability beyond the project life is to have a clear fund raising mechanism that could guarantee a future to the project; this point in its main schemas is described in chapter 6. Chapter 7 addresses stakeholders roles as they are perceived at this stage of the project, while the following one identifies the social impact of STORM in each pilot community

Being in the first phase of the project with pilots ready to start, this document provides a guideline for activities the project is performing in order to keep the very heterogeneous framework of competences working in the team focused to project viability principles.

We can anticipate here some of the conclusions identifying three main factors (apart from regulatory ones), that could affect the viability of the project:

- 1) Creation of a common communication pathway among different competences in place;
- 2) Involve stakeholders and discuss with them suggestions how to face constraints viewed from the outside;
- 3) Have in place technologies effective for users independently from their profile

A general acknowledgement should be given to all partners who participate actively in the research and collection of material to prepare this deliverable. They have been cited in the authors list.

1 STORM project brief description

1.1 Context

The protection and conservation of European Cultural Heritage is a therefore a priority for our society, not only to preserve the European cultural identity, but also because Cultural Heritage is a wealth creator that boosts economic impact and tourism-related business opportunities, on which many cities and communities depend. EU heritage assets are extremely exposed to **climate change and natural hazards**, which threaten their integrity and may compromise their value. The loss or deterioration of these outstanding assets would negatively affect local and national communities, due to their cultural importance as a source of information on the past and a symbol of identity, as well as for their socio-economic value.

In the last four decades, many European institutions have carried out works on preventive strategies aimed at protecting the EU cultural buildings and sites. For example, in Italy, the pioneering project of the '**Carta del Rischio**' developed by the Istituto Centrale per il Restauro in the early 1990's (Istituto Centrale per il Restauro, 1992), began a long and complex survey of territorial-based environmental and human-caused risks that allowed for the first ever geographic mapping of Cultural Heritage at risk in the entire country. The same work has been done by UK within the regional reports on the '**Buildings at Risk**' produced by the English Heritage (English Heritage, 1998), in Portugal with the '**Carta de Risco do Património Arquitectónico**', developed by the Direcção-Geral dos Monumentos Nacionais (Carvalho, José Maria Lobo de 2001), in Greece with the research/innovation project CRINNO – **EMERIC** targeting the tectonic and seismic risk assessment of the historical centres of the main cities of Crete (EMERIC, 2006), and in Turkey within the specific targeted research/innovation project **PROHITECH**, where reversible mixed technologies was investigated for the earthquake protection of historical buildings (PROHITEC, 2008).

Although different in their nature and specific objectives, all these projects had prevention and public policies at their core. They all tried to achieve a detailed knowledge of the general condition of the country's national heritage, and where (unstructured) support is given by existing disaster procedures. But none of them has focused on the following step: What to do next?

To put such valuable information in a practical and useful set of tools for heritage safeguarding and taking it to the next level is where the STORM project differs from all others.

It will create a new innovative set of processes and tools, useful for heritage sites, organisations, governments and citizens across Europe. By making the processes user focused and citizen centred, STORM brings together wider awareness of protection and prevention than ever before. Preventive action on the conservation of historic structures, emergency measures (to mitigate natural or climate change caused disasters) and a network of shared knowledge and tools among all European partners, bring a valuable contribution that enables to go far beyond the current state of the art. In particular, **STORM aims at defining, developing and assessing a technological integrated framework providing eco-innovative, cost-effective and collaborative methodologies to support all the involved stakeholders to better act in the prevention (to mitigate the effect of climate phenomena) and intervention (when a disaster occurs) phases.**

The developed integrated solution will be tested through case studies in five different countries (Italy, Greece, UK, Portugal and Turkey), showing the type of risks that are most prevalent in each site and region, contributing to building a European risk map. For each site, the particular profile,

materials, and risks (environmental and anthropogenic), will be used in order to define the corresponding trial case, focusing only on Cultural Heritage sites, structures, and artefacts.

The proposed solution will be shaped by leveraging the cooperation of a **unique multidisciplinary team**, brought together to work on the STORM project consisting of **20 STORM partners and 2 associated partners** (an important site: Pompeii, and ICCROM, an intergovernmental organisation dedicated to the conservation of Cultural Heritage founded by UNESCO). The consortium partners, with proven hands-on experience, supported by their scientific excellence and technical innovation, provide all the competences needed to ensure the implementation of functional and effective solutions to support all the actors involved in the management and preservation of European Cultural Heritage sites (**architects, restorers, archaeologists, site curators, seismologists, meteorologists, climate change experts, sensor providers, ICT service providers, civil protection, rescue organisations, policy and decision makers, and critical but often forgotten – citizens and site visitors**).

1.2 Project Objectives

STORM plans to introduce **an integrated framework and a platform** providing tools and services both at macro level to give a global view of the entire value chain and at specific level to promote the improvement of specific processes for protection and prevention. A novelty of STORM is to promote both views in the same framework; STORM will allow users to address each single issue within a simple process supported by the related technology. The STORM integrated framework will manage those modules to give a view that can be drilled down to give stakeholders the possibility to improve it. To support this, STORM will introduce **a system to identify existing processes adding critical relationship management automation to improve the process itself**. STORM aims to provide critical decision making tools to all European Cultural Heritage stakeholders affected by climate change and natural hazards. This will be **a new innovative capability to improve existing processes related to three identified areas: Prevention, Intervention and Policies, planning and processes** (figure 1).

The STORM action will encompass the following test sites: the **Diocletian Baths**, Rome, Italy; **Mellor Heritage site**, Manchester, UK; **Roman Ruins of Tróia**, Portugal; **Historical Centre of Rethymno**, Crete, Greece; and **Ephesus**, Anatolia, Turkey; as well as one other relevant site run by an associated partner **Pompeii**, Italy. The STORM project also counts on the support of **ICCROM**, an intergovernmental organisation dedicated to the conservation of Cultural Heritage founded by UNESCO. The STORM methodology will address the whole ecosystem including design, prevention, implementation, intervention, as well influence policies and processes at all levels (individual, private and government). The final case of each cycle is the triggering point of new cycles of improvements and enhancements at policy and tools level.

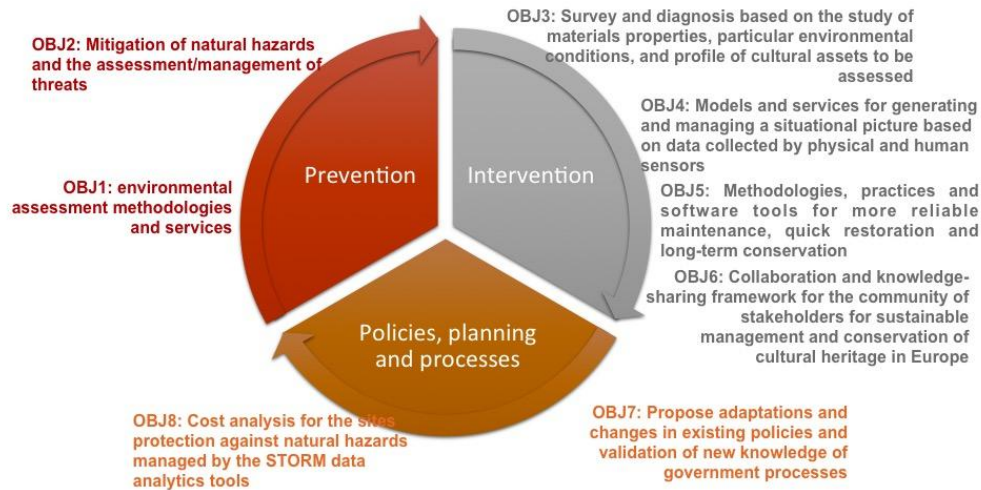


Figure 1: Overview of the three areas in which STORM will focus on.

1.2.1 Prevention

OBJECTIVE 1. Select, evolve and integrate innovative environment assessment methodologies and services to effectively and accurately process, analyse and map environmental changes and/or natural hazards.

OBJECTIVE 2. Define and implement an innovative methodology and a supporting service for the mitigation of natural hazards and climate change, and the assessment/management of corresponding threats while minimizing their impact.

1.2.2 Intervention

OBJECTIVE 3. Provide innovative, cost effective, non-invasive and non-destructive methods and processes, as well as applications for survey and diagnosis based on the study of materials properties, particular environmental conditions, and profile of the cultural assets to be assessed.

OBJECTIVE 4. Define and implement models and services for generating and managing a situational picture based on the data/information collected from the field by physical and human sensors and evaluators (crowdsensing).

OBJECTIVE 5. Provide innovative, methodologies, practices and software tools for more reliable maintenance, quick restoration and long-term conservation of the Cultural Heritage assets, preserving their historic and cultural integrity.

OBJECTIVE 6. Define a collaboration and knowledge-sharing framework for the community of stakeholders to co-create, share and maintain improved practices, knowledge and experience on cost-effective and eco-innovative solutions for sustainable management and conservation of Cultural Heritage in Europe.

1.2.3 Policies, planning and processes

OBJECTIVE 7. Propose adaptations, changes in existing policies and validation of new knowledge in government processes.

OBJECTIVE 8. Cost analysis for the sites protection against natural hazards managed by the STORM data analytics tools.

2 The project Viability principles

Generally, cultural heritage protection is a marginal issue for politicians and governments in most European countries.¹

UNESCO, ICCROM and ICOMOS defined a set of principles to support cultural heritage conservation and recovery that have been deeply analysed in both D1.1 and D2.1



2.1 Existing regulations and their effects to project viability

Article 5 of the THE UNESCO WORLD HERITAGE CONVENTION states:

“To ensure that effective and active measures are taken for the protection, conservation and presentation of the cultural and natural heritage situated on its territory, each State Party to this Convention shall endeavour, in so far as possible, and as appropriate for each country: [...] (d) to take the appropriate legal, scientific, technical, administrative and financial measures necessary for the identification, protection, conservation, presentation and rehabilitation of this heritage; [...]”²

National governmental bodies have issued guidelines and national action plans for combating various types of natural and man-made disasters. These are mostly legal documents, and usually reflect situations that lie under the responsibility of one of the Ministries.³

In deliverable D2.1 an extensive investigation on existing normative to safeguard historical patrimony in countries involved in the STORM project has been carried on.

A brief summary of its outcomes is provided in table 1

Type of regulation	Level	Brief description
Recommendations	INT	To foster a culture of prevention, enhancing disaster preparedness in order to guarantee a more efficient response and adequate recovery (“Build back better”); To create and execute strategies for planning, inspecting, monitoring and maintaining cultural heritage;

¹ [http://www.europarl.europa.eu/RegData/etudes/etudes/join/2007/369029/IPOL-CULT_ET\(2007\)369029_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/etudes/join/2007/369029/IPOL-CULT_ET(2007)369029_EN.pdf)

² Suter, K. D. (1991). The UNESCO World Heritage Convention. Environmental and Planning Law Journal, 8(1), 4-15.

³ [http://www.europarl.europa.eu/RegData/etudes/etudes/join/2007/369029/IPOL-CULT_ET\(2007\)369029_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/etudes/join/2007/369029/IPOL-CULT_ET(2007)369029_EN.pdf)

		<p>To integrate plans for risk management recognizing the specificity of cultural heritage in national and local government policies;</p> <p>To develop legislation and specific norms to ensure the safeguard of cultural heritage in what relates to prevention, preparedness, response and recovery in the event of a disaster (at national and local levels);</p> <p>To invest in the establishment of funds specifically destined for risk situations;</p> <p>To enable local authorities and communities, allocating resources and creating incentives, and holding them accountable, as active partners, for heritage preservation;</p> <p>To promote institutional cooperation among actors on cultural heritage, civil protection, and humanitarian and environmental agencies, namely through a common legal basis;</p> <p>To raise awareness of civil society to the importance of risk reduction, and to the role of cultural heritage as a factor of resilience of communities facing a crisis;</p> <p>To promote training actions and scientific and technological development in the area of risk management of cultural heritage, aiming for the sharing of knowledge and information.</p>
Legislation	NAT (GR)	<p>Conservation and restoration works are to be executed by regional services specialists;</p> <p>Regional services have the duty to inspect monuments in order to evaluate their state of conservation.</p> <p>In the emergency, it is planned the constitution of a committee comprised of specialists on conservation, civil engineering, architecture, archaeology and art history, which must inspect and evaluate damages prior to the implementation of protective measures.</p>
Legislation	NAT (IT)	<p>Related to earthquake risk: In the case of immovable property situated in areas declared to be at risk of earthquake on the basis of the laws and regulations in effect, restoration shall include work for structural upgrading;</p> <p>Ministry of Cultural Heritage released a specific direction enforcing the elaboration of emergency plans for cultural heritage describing the various risks associated to places and assets (fire, seismic, explosions, floods, etc.), managed from 2012 by a specific Crisis Unit;</p> <p>In 2015 further assessment to the regulation has been done introducing 9 templates to collect data related to cultural heritage damages coming from disasters.⁴</p>
Legislation	NAT (PT)	<p>Museums must have the necessary safety conditions to guarantee the protection and integrity of deposited cultural assets and of visitants, staff and infrastructures;</p>

⁴ http://www.beniculturali.it/mibac/multimedia/MiBAC/documents/1437986288170_DIRETTIVA_23Aprile2015.pdf

		There is a programme to encourage the private sector to donate funds for the safeguard, conservation, reconstruction and restoration of classified cultural heritage
Legislation	NAT (TK)	Disaster and emergency planning activity is defined within the missions of municipalities, Provincial Special Administration, and mainly provincial organization of Prime Ministry, Disaster and Emergency Authority (AFAD); A National Disaster Response Plan is in place and collaboration with ICOMOS is working Protection of Cultural and Natural Assets code in place Procedures are listed in a document entitled “Implementation Concerning The Registered Immovable Cultural Property Together with Structures in Protection Areas and Their Interaction Transition Zones that are Damaged as a Result of Earthquakes”, defines the necessary actions and procedures for structures that locate in protection areas
Legislation	NAT (UK)	Historic Environment Scotland, Historic England (HE) and Royal Commission on the Ancient and Historical Monuments of Wales (RCHMW), have funded independent research on the impact on heritage of climate change; The ‘Heritage at Risk’ survey highlights key listed and scheduled buildings and sites under threat from neglect, decay or inappropriate development and is updated periodically
Recommendations	INT	ICCROM with the document “A Guide to Risk Management of Cultural Heritage” ⁵ ; Government of Canada, Canadian Conservation Institute “The ABC Method: a risk management approach to the preservation of cultural heritage” ⁶ ; The ultimate goal of risk management is to help heritage professionals and organizations in charge of collections, buildings, monuments, and sites to achieve their objectives in a more controlled and successful way. This means both optimizing the preservation of these heritage assets and optimizing their benefits to society over time; With this introduction to risk management you can start to look at your heritage asset through new eyes. This new perspective includes an understanding of the heritage asset context and significance, a comprehensive assessment of risks that threaten the heritage, good communication with different actors and stakeholders, and the

⁵ A Guide to Risk Management of Cultural Heritage (2016), http://www.iccrom.org/wp-content/uploads/Guide-to-Risk-Management_English.pdf

⁶ Heritage, C. (2017). The ABC Method: a risk management approach to the preservation of cultural heritage. <http://canada.pch.gc.ca/eng/1479915907418>

		development of cost-effective measures to reduce (mitigate) priority risks
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Table 1 - Existing Regulations Summary

2.2 The importance to involve Stakeholders and their weight in project viability

The existing lack of homogeneity in current regulations and practises around Europe could be a positive strength for STORM project to be the catalyser of new proposals both in terms of policies and regulations. That objective is conditioned by the presence in the project validation team of relevant stakeholders, with a level of involvement that could support proposals fine tuning. In view of that, a brief identification of key stakeholder categories related to their possible support for each project objective achievements are listed in Table 2. The project team is also providing a priority ranking for their participation to project validation in order to guide all partners in the selection of best useful stakeholders.

The first step is to define each stakeholder category (this list could be not exhaustive and will be revised during the project life-time):

Category	Description
Cultural heritage authorities	Local, Regional and central authorities dealing with historical sites often regulating also private owned properties. They are the decision makers and have a great role both in decisions on what kind of intervention are planned, and in some countries, they manage also funds.
Research centres	Research centre are facilities dedicated to research, commonly with the focus on one of areas covered by the project. They are very important to keep the STORM idea updated in the future also beyond the project life-cycle.
Universities	Universities involved as stakeholders should be those running academic activities in areas of competence involved in the project. They play a key role in possible exploitation of training outcomes.
Professionals	Several categories of professionals (archaeologists, architects, restorers, engineers, geologists, climatologists, historic of arts), are going to be STORM stakeholders; their participation is going to help in better focus strategies and related action plans.
Site owners	There are two types of site: those to be considered commons being public, and those which are owned by private entities. In both case (but with different procedures), they are strongly interested in STORM outcomes.
Large enterprises	Large enterprises are very interested to provide industrial structure for the STORM project both in terms of material, services and technologies. They could be very important in providing solution which could be easily standardised.

SMEs	Small and medium enterprises are mostly interested in specific solutions both from the technical point of you and from the intervention side.
Civil protection	Civil protection is managing the overall intervention in most of countries although they have a more dedicated role after the emergency in managing the situation generated by the hazard.
Fire brigade	Fire brigade is the actor who manages directly the main emergency during or after the hazard while humans are at risk. Their intervention often goes beyond the simple emergency management for humans and include also cultural patrimony.

Table 2 - Stakeholders categories

In the following section the proposal to involve the main stakeholders categories and their ranking is presented in relation to their weight for its viability.

The following table presents the cross-matching of stakeholders' categories and each project objective assigning a value to each category related to its importance for the project viability (1-5):

STORM Objectivs	Potential stakeholders	Ranking
O1.1 - Novel predictive models	Cultural heritage authorities	1
	Research centres	2
	Universities	3
O2.1 - Methodology for the mitigation of natural hazards and the assessment / management of corresponding threats.	Cultural heritage authorities	1
	Professionals	2
	Research centres	3
	Universities	4
O2.2 - Supporting services for the mitigation of natural hazards and the assessment /management of corresponding threats.	Site owners	2
	Large enterprises	3
	SMEs	1
O2.3 - Tools for the mitigation of natural hazards and the assessment/management of corresponding threats.	Site owners	1
	Large enterprises	4
	SMEs	3
	Professionals	2
O3.1- Methods, Processes, Tools and Services for Survey and Surveillance.	Site owners	1
	Large enterprises	5
	SMEs	3
	Research centres	2
	Universities	4
O3.2- Methods, Processes, Tools and Services for Monitoring and Diagnosis.	Site owners	3
	Large enterprises	5
	SMEs	2
	Research centres	1
	Universities	4
O3.3- Methods, Processes, Tools and Services for Restoration and Conservation.	Site owners	2
	SMEs	1

03.4 Crowdsensing extractors and filters	Research centres	3
	Universities	4
04.1 - Model and Services for creating situational pictures.	Site owners	1
	SMEs	3
	Research centres	2
	Universities	4
04.2 - Model and Services for managing situational pictures	Civil protection	1
	Fire brigade	2
	Professionals	4
	Research centres	3
	Universities	5
05.1 - Methodologies and Practices for assessment, quick restoration and long-term conservation.	Site owners	3
	Civil protection	2
	Fire brigade	1
	Research centres	4
	Universities	5
06.1 - Network of stakeholders focused on sustainable management and conservation of cultural heritage in Europe.	Site owners	1
	Large enterprises	5
	SMEs	2
	Research centres	3
	Universities	4
07.1 - Policies improvements.	Cultural heritage authorities	1
	Professionals	4
	Research centres	3
	Universities	2
07.2 - Collaboration platform	Cultural heritage authorities	1
	Civil protection	2
	Fire brigade	3
	Research centres	4
	Universities	5
08.1 - Analytics tools.	Civil protection	2
	Fire brigade	1
	Research centres	3
	Universities	4
08.1 - Analytics tools.	Cultural heritage authorities	2
	Site owners	1
	Research centres	3
	Universities	4

Table 3 - Stakeholders Ranking

Table 3 is the first step that will drive, in the part related to role of stakeholders, to a clear identification of their potential role for the project viability from a practical point of view.

2.3 The project in the Ecosystem and its financial constraints

2.3.1 Historical Sites Ecosystem

If original historic properties, or their cultural content, are deemed to be of significance or of unique societal value, though it is not possible to put a realistic financial value on them, the ensemble could be a critical component of a business. Losing the components of these objects due to a disaster would, in many cases, also lead to loss of the business. Consequently, no level of insurance cover will be able to adequately recover the business if the original authentic value of the business is lost. The question is how companies are to express the levels of risk that can occur, and how they fully declare these risks in their balance sheets. Many companies that are cultural heritage stakeholders are ill-prepared for such a situation.

2.3.2 Financial Aspects

The area of funding to face emergency is a blurry one: although funds to face emergencies are often planned in each country and also at European level, in each country there are not specific financial mechanisms for cultural heritage⁷. This lack of strategy could be affect a real mitigation actions around Europe because costs for first aid are often not recorded in the cultural heritage accounting but in the general efforts to face the emergence.

2.3.2.1 Greece

Funds to be used in emergency situations are managed by the Civil Protection office, and derive from the National Funds. The sum allocated depends on the type of disaster that has occurred; there is no specific budget, since those differ according to the needs. Again, these funds are not available for the protection of heritage against natural hazards and technical disasters, but only for the protection of people.

2.3.2.2 Italy

Expenses resulting from works on cultural heritage (immovable and movable) are borne by owners, possessors or holders, whether they have been imposed on them or directly executed by the Ministry. Voluntary conservation works can be developed by owners, under the proper authorization, and can be eligible for State funding. Costs of conservation works performed by private owners may, in some cases, be reimbursed, wholly or partially, by the Ministry. If such is the case, owners must open to the public the immovable cultural asset in their property. In case of urgency, the Superintendent can immediately adopt the necessary conservation measures. The Ministry may also grant interest subsidies for mortgages, granted by credit institutions, for carrying out authorized conservations works.⁸

2.3.2.3 Portugal

Decree-Law 107/2001 also establishes that owners, possessors and other holders of real rights on classified or under classification buildings, or of buildings located in protected areas, must carry out all necessary works or interventions in order to guarantee its safeguard. Works on classified or under classification buildings, or buildings located in protected areas, that are state property, are to be carried

⁷ Olshansky, R. B., Hopkins, L. D., & Johnson, L. A. (2012). Disaster and recovery: Processes compressed in time. *Natural Hazards Review*, 13(3), 173-178.

⁸ H2020 - 700191 - STORM - D2.1

out by the competent services. Decree-Law no. 136/2004, of 9 September, determines that conservation works in such buildings must be carried out at least every 8 years, and municipalities can promote them in case of urgency, subsequently imputing expenses to the legal proprietary.

Expenses of conservation and restoration works are to be supported by owners, possessors and other holders of real rights on classified cultural assets, which are entitled to access support systems, incentives and funding destined to promote the preservation of cultural heritage. For any works regarding the conservation of state-owned cultural assets, the competent body of the central administration will resort to its own funds, or to European funding programmes.

2.3.2.4 Turkey

Turkey has several means for funding cultural heritage, that can be applied to conservation and mitigation of risks, as well as resolution of emergencies, namely:

- The appropriations transferred to the Ministry of Culture and Tourism from the general budget to the annual investment program;
- The contribution appropriations collected at the rate of 10% of the real estate tax for the protection and evaluation of the immovable cultural property within the field of duties of the municipalities and special provincial administrations;
- Appropriations transferred by the Ministry for the protection, maintenance and repair of immovable cultural property that are in the possession of private owner and legal entities;
- In addition, the appropriations allocated from the metropolitan municipal budget every year in order to preserve the cultural and natural assets and historical fabric - that are among the duties of the municipality;
- For movable cultural assets, financial resources are also provided from the Ministry of Culture and Tourism budget.

2.3.2.5 United Kingdom

The funds needed to face cost of conservation-restoration, whether for preventive or recovery stage to scheduled monuments, listed buildings, conservation area, and registered parks and battlefield, belongs to the owner (private, local government, trusts and charities).

Restoration grants are available for Grade I and II* listed building through Historic England and other national NGOs. Owners of Grade II listed buildings and other non-listed historic properties can apply for restoration funds from local authorities and from a variety of private bodies such as the Architectural Heritage Fund, the Princes Regeneration Trust, Heritage Lottery Fund, and the Association for Industrial Archaeology. Grants are available for the restoration and purchase of moveable heritage items by charities and local government through a number of bodies including The National Heritage Memorial Fund (funded by the UK Government), the Heritage Lottery Fund and other charities⁹

⁹ Historic England - <https://historicengland.org.uk/services-skills/grants/our-grant-schemes/>

3 Country oriented P.E.S.T.L.E analysis

3.1 European Union

Political

Within the European Union, elaborating and implementing culture sector policies is a responsibility of member states. In this policy area, at the European level, states are represented in the Council of the European Union by Culture Ministers, who in May 2014 elaborated shared guidelines for the preservation and valorisation of the European cultural heritage¹⁰, which consider cultural heritage ‘a major asset for Europe and an important component of the European project’ (art. 3). The European Commission acts as a facilitator to address common challenges (impact of new technologies, changing models of cultural governance...). The Commission is also independently committed to the promotion and protection of cultural heritage: it develops relevant policies and programmes at the EU level and it promotes the cooperation between member states and culture stakeholders. The commitment of the Commission to the promotion and protection of cultural heritage is stated in a Communication¹¹, which lays down the foundations for an integrated approach to cultural heritage for Europe. Moreover, the EU is strongly committed to take action to mitigate climate change.

Impact on STORM: overall, the preservation of cultural heritage as such cannot be considered one of the EU top priorities; however, the EU institutions clearly recognise the value of the European cultural heritage under several points of view (economic and social above all). Therefore, STORM is likely to receive greater political favour if it will provide, among everything else, boosters for economic growth and social inclusion.

Economic

Among EU member states, the culture sector is a resilient source of job creation and an important contribution to Europe’s economic growth, as it creates an estimate of €415 billions of EU GDP, 3.4 million tourism enterprises and 15.2 million jobs¹². For these reasons, the promotion of cultural heritage has been included in the Europe 2020 strategy for economic growth¹³. European cultural heritage benefited from €4.5 billion of European funds between 2007 and 2013, around 0,005% of total expenditures of the EU in that period.

Impact on STORM: In times of poor economic performance, the top priority of the EU remains the stimulation of investment with the purpose of job creation¹⁴. Therefore, projects like STORM are likely to be better financed in the long-term if their positive economic impacts (mainly creation of jobs) will be highlighted in the short run.

¹⁰ Draft Council conclusions on cultural heritage as a strategic resource for a sustainable Europe, No. 9129/14 CULT 68, Brussels, 2 May 2014. Available at <http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%209129%202014%20INIT>

¹¹ Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COMM(2014) 477 final, Brussels, 22/07/2104. Available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2014:477:FIN>

¹² Ibid., §1.2.

¹³ Targets of the Europe 2020 strategy can be found at https://ec.europa.eu/info/strategy/european-semester/framework/europe-2020-strategy_en.

¹⁴ European Commission website: Priorities https://ec.europa.eu/priorities/index_en.

Social

Social conditions are obviously very different in different locations and national contexts; thus, a case-by-case analysis is fundamental. Generally, at the EU level the culture sector is considered an excellent element of social inclusion and promotion of cultural diversity¹⁵. However, one needs to bear in mind that, in case of extreme, destructive events, safeguarding cultural heritage may not be a priority, as society is mobilized to protect people's lives above all. Nevertheless, even destructive events may foster social aggregation around cultural heritage, as happened in Florence after the great flood in 1996¹⁶.

Impact on STORM: Paradoxically, STORM could benefit from contexts of social exclusion. Its crowdsourcing approach might become a means of social inclusion and empowerment for people that would be otherwise completely marginalized. Creating social cohesion around cultural heritage sites would then be fundamental for the prevention of damages and for a shared and quick reaction to unforeseeable destructive events.

Technological

STORM relies on leading edge technology (both hardware and software), which may be very expensive. Moreover, the lack of internet connection may represent a limit for the use of crowdsourcing and crowdsensing mobile applications in some sites.

Impact on STORM: Regarding the need for complex and expensive instruments, the target of investing 3% of national GDP in Research and Development, included in the Europe 2020 strategy¹⁷, might benefit STORM by providing cheaper and more easily available technologies. Moreover, the availability of a strong, reliable and easily accessible internet connection is a pre-requisite for the good implementation of the project.

Legal

At the EU level, the most important legal framework regarding cultural heritage is provided by Article 167 of the Treaty on the Functioning of the EU (TFEU), which states that 'the Union shall contribute to the flowering of the cultures of Member States'¹⁸. Over time, this principle has been implemented by thousands of regulations and directives at the EU level¹⁹.

¹⁵ See Draft Council conclusions on cultural heritage as a strategic resource for a sustainable Europe, No. 9129/14 CULT 68, Brussels, 2 May 2014, art. 2. Available at <http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%209129%202014%20INIT> and Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COMM(2014) 477 final, Brussels, 22/07/2104, §1.1. Available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2014:477:FIN>.

¹⁶ See STORM project, D2.1: State of the art policies on government of Cultural Heritage against natural disasters and climate change, p. 23.

¹⁷ See Europe 2020 strategy at https://ec.europa.eu/info/strategy/european-semester/framework/europe-2020-strategy_en

¹⁸ Treaty on the Functioning of the European Union. Available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12012E%2FTXT>

¹⁹ Among others: Resolution of the European Parliament of 8 September 2005 on natural disasters (fires and floods) in Europe. Available at <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P6-TA-2005-0334+0+DOC+XML+V0//EN> and DIRECTIVE 2007/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2007 on the assessment and management of flood risk. Available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1484849792656&uri=CELEX:32007L0060>.

Impact on STORM: even though national legislation must be kept into account, EU legislation favours and promotes the implementation of STORM.

Ecosystem

The EU is strongly committed to fight climate change and to achieve sustainable growth²⁰. STORM completely respects this principle as it does not utilize any pollutant. However, the lack of a social ecosystem around the sites may undermine the reliability and usefulness of the crowdsourcing and crowdsensing tools, which are fundamental for the prevention of damages and the reaction to natural hazards.

Impact on STORM: by creating a social ecosystem around cultural heritage sites, including and actively involving nearby communities, STORM indirectly raises awareness on climate change. Hence, the EU cannot but favour such approach, as it contributes to tackling climate change, another priority of the EU²¹.

²⁰ European Commission website: Climate Action. Available at https://ec.europa.eu/clima/policies/eccp_en

²¹ See European Commission website: Priorities. Available at https://ec.europa.eu/priorities/index_en.

EUROPE - Summary

The following table summarises the main analysis outcomes at European level:

EU						
Issues	Priority to economic growth and social inclusion.	Priority to economic growth and job creation.	Cultural heritage NOT always a priority in case of emergency.	Expensive technology.	Commitment to fight climate change and achieve sustainable growth.	Main legislative framework: Article 167 TFEU.
	Promotion and protection of cultural heritage.	Culture sector creates €415 bln GDP and 15.2mln jobs.	Cultural heritage considered a means for social inclusion.	Possible lack of internet connection (wi-fi and mobile).	Potential lack of social ecosystem around the sites.	General guidelines for management of cultural heritage.
	Climate change mitigation.	Only 0.005% of EU expenditures to cultural heritage in 2007-2013.	Social conditions are different in every state.	Europe 2020 strategy aims at providing more funds for research.	Action against climate change is one of EU priorities.	Consider national legislation.
Impact	Cultural heritage NOT a priority as such, but potential asset.	Cultural heritage is NOT an economic priority.	STORM can be a means of social empowerment, benefit from social exclusion.	Potential for cheaper and more readily available technology.	Need to create social ecosystem to make crowdsourcing effective.	Supportive environment created by EU legislation.
	Supportive political environment.	More funds if more jobs will be created.	Need for case-by-case analysis.	Need to consider installing internet connection (wi-fi) in sites.	Need to raise awareness on climate change.	Need to consider national and local legislation.

Table 4 - STORM Europe PESTLE analysis

3.2 United Kingdom

Political

Cultural heritage in the UK is defined in a Government document published in 2010 as 'The physical legacy of thousands of years of human activity...in the form of buildings, monuments, landscapes and sites. It is a legacy of trade, population movement, architectural and artistic endeavour, economic, political and social development and the use of natural resources from prehistory to the present.' (DCMS 2010, 5). This document builds upon two pieces of UK legislation: The Ancient Monuments and Archaeological Areas Act of 1979 and the Planning (Listed Buildings and Conservation Areas) Act of 1990. The oversight of cultural policy at UK Government level is provided by the Department of Culture, Media and Sport. At national level policy guidance in England, Northern Ireland, Scotland and Wales is provided by government-funded cultural agencies, which, in the case of Northern Ireland, Scotland and Wales, report to the relevant regional assembly.

The UK Government's commitment to protect cultural heritage worldwide is shown by the passing in February 2017 of the 'Cultural Property Bill'. This new Act of Parliament will enable the UK to ratify UNESCO's 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed conflict.

The impact on STORM: Since heritage policy has been devolved to each of the home countries of the United Kingdom (as constituted in 2016 at the start of the current research project), each of these zones has its own approach for the conservation of Cultural Heritage. Each of the national state cultural bodies in England (Historic England), Northern Ireland, Scotland (Historic Environment Scotland) and Wales (CADW) has explicit policies on preserving cultural heritage from climate change and human action, and in the case of Scotland and Wales on the value of cultural heritage to wider society. This provides a positive environment where the STORM results and outcomes could be taken up.

Economic

In 2016, Historic England released a report that showed that the heritage sector was worth annually £21.7bn (or 2% of GVA) in the English economy, that tourism expenditure annually amounted to £18.4bn, that the heritage sector employed over 328,000 people and that heritage construction output was worth each £9.7bn in England alone²².

In North West England, the heritage economy is worth £1.85bn annually and employees 35,000 people. UK economy sets to grow among 1.5% and 2% between the current year (2017) and 2020, the value of this sector is likely to increase as well.

Furthermore, analysis by the CBA (Council for British Archaeology) in 2010 demonstrated that there were around 200,000 volunteers annually who undertook archaeological work. There were also around 2,030 organised groups/societies involved, not least dozens of Young Archaeologist Clubs. This equates to £175m in voluntary contributions to society as whole (assuming the standard day-rate costs as applied by the Heritage Lottery Fund charity).

²² <https://www.historicengland.org.uk/images-books/publications/heritage-and-the-economy/>

However, state funding of local government has been declining in the UK since 2010 and is set to continue its decline until 2020. Local council heritage funding has been several times a hit, making the role of local communities in preserving their own cultural past, more important.

Impact of STORM: The funding of cultural heritage at local, regional, national and European level reflects a growing awareness of its importance in terms of local, national and European identities. The increasing role of local communities, charities and the private sector in dealing with cultural heritage in the UK provides an opportunity for the STORM outputs on risk management to be turned into a marketable package for the heritage business sector.

Social

The impact of Cultural Heritage in the creation of different identities at local, regional and national levels in the UK, is reflected in the varying guidance on heritage from the state-funded cultural bodies in England, Northern Ireland, Scotland and Wales. It is also reflected in the cultural policies of large land-holding charities such as the Canal and River Trust, and the National Trust, as well as through the Heritage Lottery Fund charity and the thousands of small private museums across the UK. The role of local communities in promoting their own heritage has been encouraged at a time of budget cuts by local authorities in the UK. The transfer of heritage assets to community control by local government has been promoted as a way of saving those assets as well as increasing their local worth and impact.

Impact of STORM: The role of cultural heritage in strengthening local identity and place, spreading a growing awareness of its importance for local, national and European communities. The risk management systems designed for STORM provide a practical way for local communities to actively engage in the preservation of their own past whilst acknowledging the value of its wider context.

Technological

The role of web-based communication systems in raising the awareness of the importance of Cultural Heritage can be seen in Historic England's 'enrichment project'. Here members of the public are invited to add their own pictures to the national database for each listed or scheduled heritage asset in England. It is also seen in the increasing access to heritage databases, made available to the public through local government and through the Portable Antiquities Scheme websites. The use of 'crowd-funding' campaigns (buy for instance the digital company DigVentures) to fund community and research archaeology projects is also a proof of the increasing popularity of heritage and the power of these techniques to reach new audiences in the UK.

Impact of STORM: the user-friendly digital outputs of STORM will raise awareness of the importance of Mellor's own heritage, but will also act as a demonstrator of how the communities can be engaged in the active preservation of their local past through such web-based risk management networks.

Legal

None of the three sites at the heart of the Mellor pilot site currently have national nor local protection.

Impact of STORM: The STORM outputs have the potential to raise the awareness of these sites and their importance in the Mellor area. Local involvement in their management may encourage future designations to protect these sites through existing national legislation or local registered sites of historic importance through local government.

Ecosystem

The Mellor Pilot site is located in a hill and valley landscape. This is an area subject to moderate temperature ranges and rainfall, but also subject to occasional sudden climatic events, such as heavy rain leading to flooding, and occasionally leading to soil erosion and freezing condition liable to damage standing structures. The pilot site lies on the western edge of the Peak District National Park, that is an area of outstanding natural beauty and cultural heritage and, this favourable position has fostered a steady increase in tourism in the area.

Impact of STORM: The STORM project outputs should have a positive impact on managing the natural environment and the human impact on cultural heritage in the area through systematic risk management and mitigation.

UNITED KINGDOM - Summary

The following table summarises the main analysis outcomes at UK level:

Mellor						
Issues	<p>Government is prioritising economic growth and debt reduction. CH may not be a priority.</p>	<p>CH creates large amounts of GDP for the UK (£21.7bn).</p>	<p>Increase in UK-based tourism to CH sites and assets.</p>	<p>How UK research spending will be impacted from the UK leaving the EU. Research spending may decrease.</p>	<p>UK is committed to take action on climate change.</p>	<p>There is little legislation for measures to rectify and prevent damage to CH.</p>
	<p>Government is committed to protect cultural heritage.</p>	<p>CH is one of the biggest attractors of tourists from both the UK and abroad.</p>		<p>Cost of the equipment for STORM.</p>	<p>Policies on climate change may not include reference to CH.</p>	<p>There is legislation protecting buildings and assets of cultural importance.</p>
Impact	<p>STORM may lead to more people in government realising the importance of protecting our CH assets.</p>	<p>STORM may lead to job creation in the UK when CH owners begin to adopt methods and policies suggested by the STORM platform.</p>	<p>STORM may increase public knowledge about climate change and the impact of change on CH.</p>	<p>STORM may demonstrate the importance of funding research and participating in collaborative research.</p>	<p>Results from STORM may further convince people of the need to take action on climate change – with direct threats to CH making people act.</p>	<p>STORM methods/results may be adopted into current laws.</p>
	<p>Job creation resulting from STORM may lead to more government funding and CH owners to adopt STORM polices.</p>	<p>Polices CH adaptation may mean that CH assets will be more withstanding to threats - reducing the chance of them being lost, and retaining high tourism level.</p>		<p>STORM may lead to some interesting research prospects regarding CH and climate conditions.</p>		

Table 5 - STORM UK PESTLE analysis

3.3 Italy

Political

As stated by the Minister Franceschini, the Italian government firmly believes in **culture as a lever for the sustainable growth of the country**, as the foundation of **identity** of citizens and as a tool for the **integration** of the new Italians²³. For this reason, in the last three years (2014-2016) the State has invested again in the sector, bringing public **resources** to pre-crisis levels and considerably facilitating private support to culture with revolutionary measures such as Art Bonus²⁴.

Italy is strongly **committed to protect cultural heritage** worldwide. An example of that is the leading role of Italy on the constitution of the Blue Helmets of Culture in the framework of UNESCO²⁵. UNESCO and Italy have created the first national task force with an initial quota of 60 people, including historians, scholars, restorers and the Police to intervene in crisis areas for the protection of world cultural heritage. Technicians and specialists will work to assess damage, plan the recovery of affected assets, supervise the work and train the local restorers, countering the looting and illicit traffic of cultural artefacts.

Impact on STORM (political) - The Italian Blue Helmets for the protection of culture in crisis areas have been launched in Rome the 16th February 2016. The ceremony took place at the Baths of Diocletian, one of the STORM pilot sites. The particular sensibility of the country for cultural heritage protection is reflected on that initiative and also on actions as the establishment of the Carta del Rischio (Risk Chart)²⁶. This framework will facilitate the uptake of STORM results and outcomes.

Economic

The national budget for culture came back in 2016, for the first time after eight years, over 2.1 billion euro. The end of the long period of cuts is marked by a 37% **growth of the MiBACT** (Ministry of cultural heritage, cultural activities and tourism) **resources**, with **new funds for the protection of heritage** and the major cultural projects. The programming of the funds for the protection awarded 300 million euro for restoration and commissioning museum security from 2016 to 2017 and 845 million euro are allocated from 2016 to 2020 for major cultural projects. Furthermore, the “Comitato Interministeriale per la Programmazione Economica” (CIPE) has allocated to culture one billion euro from Cohesion and Development Funds 2014-2020, funding 33 interventions for the protection and promotion of cultural

²³ Cultura e turismo. Tre anni di governo, MiBACT, February 2017
http://www.beniculturali.it/mibac/multimedia/MiBAC/documents/1488016102062_3annigoverno_24_febbraio_2017.pdf

²⁴ Art Bonus is a 65% tax credit for donations in favour of culture. It is one of the tax breaks among the biggest in Europe, available for companies or individuals, and that has led, since its introduction, more than 4,250 patrons to donate nearly 158 million euro for around 1,150 interventions.

www.beniculturali.it/artbonus

www.twitter.com/dariofrance/art-bonus

<http://www.beniculturali.it/LeggeArtBonus>

²⁵ Press release “Italy creates a UNESCO emergency task force for culture”

<http://www.italy24.ilsole24ore.com/art/arts-and-leisure/2016-02-16/caschi-blu-135458.php?uuid=ACe61WVC>

<http://www.onuitalia.com/eng/2016/02/16/unesco-created-in-rome-the-first-blue-helmets-of-culture/>

http://www.difesa.it/EN/Primo_Piano/Pagine/blu.aspx

www.beniculturali.it/caschi-blu-cultura

²⁶ <http://www.cartadelrischio.it/>

heritage and the enhancement of **cultural tourism**. European funds²⁷ are also complementing the investment in culture: the 2014-2020 National Objective Plan (PON) has assigned 490 million euro for the protection of cultural heritage and support for creative industries in the five regions of southern Italy²⁸. Despite the overall stability of public spending, the current levels of investment are clearly inadequate in relation to the exceptionality of the Italian cultural heritage that is positioned well under the average of European countries: Italy spends 0.3% of GDP, compared with 0.8% in France and 0.5% in the EU²⁹.

In 2015 Italy has been confirmed as the third destination country in Europe for nights spent in tourist accommodation establishments after France, the United Kingdom, the USA and the Netherlands. Italy, Spain, France and Germany together registered more than half (57.8%) of overall tourist arrivals in EU28³⁰.

Impact on STORM (economic) – Cultural heritage is a main asset for tourism in Italy. Its long-term preservation is a must also for the economic sustainability of the country. The services and tools developed by STORM may contribute to that key challenge, with impact on a sustainable growth.

Social

Cultural participation, which had experienced a downward trend during the period of crisis, has improved in 2014, especially for the growth of visitors to museums, exhibitions and archaeological sites³¹. This positive trend has been confirmed during the last 3 years: visitors to state museums increased by 7 million in three years, reaching a record of 45.5 million admissions in 2016, with an overall growth of receipts in the period amounted to 47 million euro³².

Impact on STORM (social) – An increased participation of citizens on cultural activities, through visits and social media interaction will benefit STORM, raising awareness around cultural heritage protection.

Technological

Despite a slight increase in the share of GDP spent on research (+1.31% in 2013 compared with +1.27% in 2012), Italy is positioned below the European average and far from the Europe 2020³³ objectives (1,5%). The national patenting activity is declining and the patent applications per million inhabitants confirm the gap with the rest of Europe (71.6 against 112.6 EU). Some positive notes come from innovation in enterprises. During the years 2010-2012, the percentage of firms with at least 10 employees that have introduced technological, organizational or marketing innovation, registers a slight increase

²⁷ www.twitter.com/dariofrance/ue

²⁸ Cultura e turismo. Tre anni di governo, MIBACT, February 2017
http://www.beniculturali.it/mibac/multimedia/MiBAC/documents/1488016102062_3annigoverno_24_febbraio_2017.pdf

²⁹ http://www.istat.it/en/files/2016/02/Bes_-_2015PressSummary.pdf

³⁰ Tourist flow in Italy. Year 2015, Istat, November 2016

http://www.istat.it/en/files/2016/11/EN_Tourism_2015_finale.pdf?title=Tourist+flow+in+Italy+-+22+Nov+2016+-+EN_Tourism_2015_finale.pdf

³¹ See BES 2015 at http://www.istat.it/en/files/2016/02/Bes_-_2015PressSummary.pdf

³² Cultura e turismo. Tre anni di governo, MIBACT, February 2017, p. 17
http://www.beniculturali.it/mibac/multimedia/MiBAC/documents/1488016102062_3annigoverno_24_febbraio_2017.pdf

³³ https://ec.europa.eu/info/strategy/european-semester/framework/europe-2020-strategy_en

comparing to the previous 3-year period (from 50.3% to 51%), although it decreases in different industries³⁴.

In 2015, among people using the web in the last 3 months, seven out of 10 (71.0%) enjoyed cultural contents, 56.1% interacted with others through social networks and 32.1% uploaded produced content to their own website or to any other website with the purpose of sharing it with others³⁵

Impact on STORM (technological) – STORM expects to demonstrate the importance of investing in research and innovation, in particular in the cultural heritage field, a key sector for the Italian economy and growth. The web usage statistics, mainly linked to the consumption of cultural contents and to the interaction through social networks might benefit STORM, especially on the use of the crowd-sensing app with touristic and risk management purposes that will be developed in the framework of WP4.

Legal

Italy has a specific legislation for the protection and valorisation of natural and cultural heritage, both movable and immovable, set out in the Code of the Cultural and Landscape Heritage - *Codice dei beni Culturali e del Paesaggio*³⁶ (D.Lgs 42/2004, reacted on March 2016). General legislation on cultural heritage does not impose the implementation of measures for the prevention and mitigation of risks associated to natural extreme phenomena or climate change. The Code only makes some brief references to actions of structural improvements in buildings at risk for an earthquake, and to the identification of risk and vulnerability factors to take into account during the elaboration of landscape plans.

Impact on STORM (legal) – STORM expects to contribute to improve the legal framework by providing policies recommendations, seeking to improve the processes at governmental level.

Ecosystem

According to the study "Paris and beyond. National commitments on climate change to 2030"³⁷ developed by ENEA and ISPRA in collaboration with the Ministry of Environment, the current policies are not sufficient to guarantee the country to achieve the target objectives for 2030. New actions are required in three key areas: upgrading of the housing stock, interventions on mobility and introduction of regulatory and financial tools to promote the use of renewable energy and energy efficiency. Italy has nevertheless achieved significant results thanks to the policies implemented over the years, but it can and must do even more. National policies on climate change does not include specific references to cultural heritage protection.

³⁴ See BES 2015 http://www.istat.it/en/files/2016/02/Bes_-_2015PressSummary.pdf

³⁵ Citizens, enterprises and the ICTs, Istat, 2015
http://www.istat.it/en/files/2015/12/EN_-ICT_ENG_21-December-2015_1.pdf?title=Citizens%2C+enterprises+and+the+ICTs+-+22+Dec+2015+-+Full+text.pdf







³⁶ Codice dei beni Culturali e del Paesaggio
http://www.pabaac.beniculturali.it/opencms/multimedia/BASAE/documents/2011/07/07/4b569d01cb88256c983f121b81bf7b4_2_decretolegislativo422004.pdf

³⁷ Parigi e oltre. Gli impegni nazionali sul cambiamento climatico al 2030, ENEA, 2016
http://www.minambiente.it/sites/default/files/archivio/biblioteca/parigi_ed_oltre_settembre_2016.pdf

Impact on STORM (ecosystem) – STORM dissemination activities and policies recommendations can raise awareness about the need to improve processes regarding cultural heritage protection against climate change and extreme weather events. The recent earthquakes and their impact on cultural heritage assets show the need of initiatives like STORM.

ITALY - Summary

The following table summarises the main analysis outcomes at Italian level:

Diocletian Baths						
Issues	<p>Culture as a lever for the sustainable growth of the country.</p> <p>The State has invested again in the sector, bringing public resources to pre-crisis levels.</p>	<p>National budget for culture in 2016: over 2.1 billion euro, 37% growth of the MiBACT resources.</p> <p>National funds for the protection of heritage complemented with European funds.</p>	<p>Cultural participation: visitors to state museums increased by 7 million in three years (2014-2016).</p>	<p>Share of GDP spent on research (+1.31% in 2013) is well below the European average and far from the Europe 2020 objectives.</p>	<p>The current policies are not sufficient to guarantee the country to achieve the target objectives for 2030 regarding climate change.</p>	<p>Italy has specific legislation for the protection and valorisation of natural and cultural heritage.</p>
	<p>Italy is strongly committed to protect cultural heritage.</p>	<p>In 2015 Italy has been confirmed as the third tourist destination country in Europe. Cultural heritage is one of the relevant tourism assets.</p>	<p>Increased involvement of citizens on cultural activities, through visits and social media interaction.</p>	<p>In 2015, among people who used the web in the last 3 months, seven out of 10 (71.0%) enjoyed cultural contents, 56.1% interacted with others through social networks.</p>	<p>National policies on climate change does not include specific references to cultural heritage protection.</p>	<p>General legislation on cultural heritage does not impose the implementation of measures for the prevention and mitigation of risks associated to natural extreme phenomena or climate change.</p>
Impact	<p>The particular sensibility of the country for cultural heritage protection will facilitate the uptake of STORM results and outcomes.</p>	<p>Cultural heritage is a main asset for tourism in Italy. Its long-term preservation is a must also for the economic sustainability of the country.</p>	<p>Citizens' participation and involvement will benefit STORM, raising awareness around cultural heritage protection.</p>	<p>STORM expects to demonstrate the importance of investing in research and innovation, in particular in the cultural heritage field, a key sector for the</p>	<p>STORM dissemination activities and policies recommendations can raise awareness about the need to improve processes</p>	<p>STORM expects to contribute to improve the legal framework by providing policies recommendations, seeking to improve the processes at</p>

				Italian economy and growth.	regarding cultural heritage protection against climate change and extreme weather events.	governmental level.
	The Baths of Diocletian, one of the STORM pilot sites, has been involved on the creation of the Italian Blue Helmets for the protection of culture in crisis areas.	The services and tools developed by STORM may contribute to the monuments preservation and the country sustainable growth.		The web usage statistics might benefit STORM, especially on the use of the crowd-sensing app with touristic and risk management purposes (WP4).	The recent earthquakes and its impact on cultural heritage assets show the need of initiatives as STORM.	

Table 6 - STORM Italy PESTLE analysis

3.4 Greece

Political

In Greece, the implementation of culture policies is responsibility of the state and, in particular of the Ministry of Culture and Sports, whose work is supported in certain cases by other governmental institutions, such as other ministries, local government regions and local municipalities, the police force, universities and other organizations. The organizational chart of the Ministry of Culture and Sports is at the moment under review and will probably undergo changes in the near future.

Impact on STORM: Although political decisions are largely dictated by the current economic crisis, STORM will receive favour. Small disruptions in the implementation of STORM may be expected according to the anticipated modifications in the organizational chart of the Ministry of Culture and Sports.

Economic

The current financial crisis in Greece creates an insecurity climate as it has initiated a policy of reducing administrative costs and personnel in the public sector. Nevertheless, culture remains a priority, as it has always been a robust source of income for the country in general and the area of Rethymno in particular.

Impact on STORM: The cuts in administrative costs and personnel may cause obstacles in the implementation of STORM, since they will result in an increased workload for the remaining personnel.

Social

CH in the area of Rethymno is a primary element of social inclusion. It brings together the local population with both the large group of students, and especially students of archaeology of Crete, residing in the city and the great number of tourists visiting it annually.

Impact on STORM: The sensitivity of all the above mentioned group of people for cultural matters has been proven in the past and will likely benefit the implementation of STORM.

Technological

STORM equipment is costly and requires specialization in its use and maintenance, as well as a specialized staff.

Impact on STORM: The future implementation of STORM, with the specialized personnel it requires, cannot be ascertained with certainty.

Ecosystem

The city of Rethymno with its monuments is located in proximity to Psiloritis Global Geopark of UNESCO.

Impact on STORM: The proximity to Psiloritis Global Geopark of UNESCO, which contains several archaeological sites, will increase the sensitivity of the public in the matters and terms of cultural and natural heritage protection.







Legal

Greek legislation, EU normative actions and ratified UNESCO CH conventions are into force and strongly applied.

Impact on STORM: Although changes in the national legislation may occur, it is highly unlikely that the protection of cultural heritage will cease to be a priority, as it is protected by the national Constitution. Therefore, STORM should be taken as a good example to considerate for the protection and safeguard of cultural heritage in case of climate change and for the protection of cultural landscape and environment.

GREECE - Summary

The following table summarises the main analysis outcomes at Greek level:

Historical Centre of Rethymno						
Issues	<p>Delay in decision making because of the political and economic issues that the financial crisis caused in EU and in Greece</p>	<p>Local economy of the municipality of Rethymno and the Region of Crete is strong and may contribute in a significant way in the implementation of STORM</p>	<p>Demographics: seasonality in population. Foreign tourists account for more than 80% of the total touristic traffic at the municipality of Rethymno.³⁸</p>	<p>There is a free Wi-Fi connection in public areas and the Fortezza Fortress by the municipality (both for the users of the app of STORM and for the function of the technological equipment)</p>	<p>Close to the pilot site is located Psiloritis Global Geopark of UNESCO</p>	<p>The protection of CH is constitutional (art. 24, <i>Greek Constitution</i>). Cultural tangible and intangible Heritage is protected by archaeological Law 3028/2002, which prevails to any other law. EU normative actions and ratified UNESCO cultural conventions are in force.</p>
	<p>Staff reduction and not recruiting in the public services because of the financial crisis</p> <p>Uncertainty in policy making because of the political-economical orientations in</p>		<p>Major part of the population consists of university students (ca. 18500 in 2016)³⁹resulting in a relatively high level of education for the populace</p>	<p>The technological equipment for STORM is very expensive (purchase, repair, function, management)</p>	<p>Accessibility, parking issues</p>	

³⁸ <http://www.rethymno.gr/city/travelguide>

³⁹ <http://www.en.uoc.gr/university/elements-numbers/facts-figures.html>

	<p>relation to crisis and the international economic directives that may change the priorities in the management of CH. Constant administrative changes and structure changes in the public services and especially in the ministry of Culture and Sports</p>		<p>The University that is situated in the city has a department of History and Archaeology, whose students are particularly sensitive to the maintenance of CH</p>			
Impact	<p>Understaffing of public services causes workload for the existing staff, requiring more effort to perform the increased needs. For instance, the archaeological service in Rethymno, the EPHARETH, lacks specialized personnel due to the economic crisis (whereas many employees retire, new staff appointments occur with delays and in restricted numbers).</p>	<p>The expense of STORM implementation, may be offset to a greater extent in any restoration cost from disaster</p>	<p>The seasonality may affect the efficiency of crowdsourcing & crowdsensing. However, there is an equilibrium because of the presence of tourists mostly during summer and the presence of students during all the other periods.</p>	<p>In case of unreliable Wi-Fi connection, the user has no accessibility to any app or information system that the actors of STORM may develop and use, or even for the technology equipment to function and collect data by specialized staff</p>	<p>The growing awareness and sensitivity about protected areas will affect positively the use of STORM</p>	<p>National and European Union legislation are strongly applied, as well as cultural heritage Conventions of UNESCO</p>

Table 7 - STORM Greece PESTLE analysis

3.5 Turkey

Political

Turkish government has assigned Ministry of Culture and Tourism for the management, restoration and conservation of the tangible and intangible cultural heritage (CH) in Turkey. The Ministry of Culture and Tourism has the General Directorate of Cultural Heritage and Museums that specifically oversees all procedures for the management and conservation of CH nationwide. There are three main levels for legislation, namely, laws, directives, and regulations. While the laws set the rules for nationwide policies at strategic level, directives organize specific applications of laws at tactical level. Regulations, on the other hand, are much more operational level rules that might even change for different CH sites.

Impact on STORM: STORM can develop sustainable and integrated site management business models. Potential customers might include national, regional and provincial stakeholders such as NGOs, volunteers organizations, universities, municipalities, associations for CH protection, and regional development agencies as well as companies that develop social responsibility projects represent a good market potential.

Sustainable and stable economic growth at local and regional levels as well as focus on job creation for rapidly growing young population is a priority for local policy makers. Their push for innovative projects encourages the creation of new enterprises. Steady increase in the numbers of well-qualified university graduates presents an opportunity for the new economic developments in services.

Economic

Turkey is among the largest economy in Eastern Europe, the Balkans, the Black Sea basin and the Middle East. It is the European Union's sixth biggest trading partner and the world's seventh largest emerging economy. Turkey is one of the OECD (Organization for Economic Cooperation and Development) member countries. Turkey has diverse manufacturing and heavy industry sectors such as textile, mine, and automotive and especially the Marmara Region has many factories and industries in place. Moreover, Turkey is a member of the Euro-Mediterranean partnership (Euromed) and, for this reason, it must sign free trade agreements with all other Mediterranean partners in order to create a Euro-Mediterranean free trade area. Nowadays, Turkey is facing certain economic problems. One of the most important problems is high unemployment rate. According to official unemployment data, Turkey has 11.8% unemployment rate in 2017.

Impact on STORM: Innovative and proactive methodologies developed by STORM might well introduce creation of new jobs. Especially ones that focus on measurement and continuous assessment of the site may cause involvement of local people (residents or site representatives) in the project. Therefore, additional services and technologies developed by STORM may trigger regional economic growth causing stability in the region due to direct and indirect economic impacts.

Social

Politics at local, regional and national levels interact interdependently with various social and governmental organizations. Different stakeholders might initiate local and regional development projects for CH sites. Among these stakeholders are the municipalities, Non Profit Organizations (NGOs), trade and tourism unions, chambers of architects and engineers, associations, universities, regional development agencies, etc. Policies take their shape through iterative processes among all parties. Local and regional public awareness of the projects might well increase the interest of political authorities. Local and regional priorities of the CH projects might have great influences on nation-wide politics.

Impact on STORM: Local organizations, universities and NGOs that have ongoing projects related to the site, might support the pilot site. STORM's approach encourages the volunteer participation for all the phases of the project (i.e., definition, planning, and implementation, monitoring and controlling, and closing). For example, the involvement of the Directorate of Ephesus Museum, Directorate of Survey and Monuments in Izmir and the General Directorate of Ministry of Culture Tourism in Ankara in STORM and their technical people can be considered one of the most important and early achievements of the project. Their participation in STORM might also increase the support and affinity of the local people

Technological

Methods for prevention and early detection of natural hazard damages are priceless. These tools strengthen the protection of CH and also increase the power of safety measures for visitors. The top priority of the Ephesus site is safety, proper operations and the maintenance of the site. Economic activities created by the visitors largely affect the locals. Policy makers at political levels receive the clear message of the locals on the subjects of protection and sustainable development of the site.

Impact on STORM: STORM might trigger some scientific research projects for non-invasive and non-destructive methods of surveying on CH. Low cost remote sensing technologies, ground based LIDAR and laser measurements, IR thermal mapping, seismic, geophysical and all other measurements represent great opportunities for assessing and predicting the potential risks. STORM could define sustainability maturity level of all CH sites and also could help to devise a road map to become more sustainable.

The mitigation measures to be provided by STORM for natural disasters on CH, could be maintained by increasing the awareness of Public, Private and Governmental agencies. STORM's demand for innovative methodologies for prevention, assessment and reconstruction might take a lead for local skills and capabilities improvement.

Legal

"Protection of Cultural Assets and Regional Conservation Boards" operates under the organization of Ministry of Culture and Tourism. There are 35 regional conservation boards, which cover 81 cities. Along with these, there are two additional directorates responsible for local heritage protection of urban transformation in İstanbul. Turkish government has signed and adopted UNESCO'S 'Conservation of World Cultural and Natural Heritage Convention. There are other international level policies adopted by international agreements,

Impact on STORM: STORM can cause legal improvement via increased awareness of the preventive techniques by society. Especially local involvement in these proactive measures can increase affinity and trust between the authorities and the local people.







Ecosystem

The ecosystems of the Turkish regions have different features. Mountain location and height differences are factors that affect diversity. There are many species of conifers or leafy trees in the Mediterranean and Black Sea forests. Turkey has marine ecosystems such as Mediterranean, Black Sea, Marmara and Aegean. They are very rich in fish species. Therefore, proactive and preventive measures are very important for sustainable protection and management of the site.

Impact on STORM: Considering the requirements for the expected outcome of the project, STORM is thought to have a high potential for good impact. A systematic and organized approach is needed to improve the risk management procedures of risk mitigation for ecosystem diversities and natural hazards as well as risk reduction plans.

TURKEY - Summary

The following table summarises the main analysis outcomes at European level:

Ephesus						
Issues	Inadequate education policy on cultural assets	Rising unemployment	Lack of social awareness about the protection of historic structures	Late arrival of technological developments	Environmental pollution and damage to nature	Legal problems in protecting cultural heritage
	Inadequate policies on cultural assets	Domestic and foreign debts		Technological adjustment problems	Destructive natural disasters	Deficiencies in legal framework
	Lack of qualified staff			The cost of new technology		

Impact	Local involvement in the proactive measures can increase affinity and trust between the authorities and the local people.	STORM is thought to have a high potential for good impact. A systematic and organized approach is needed to improve the economy	STORM can cause social improvement via increased awareness of the preventive techniques by society.	STORM's demand for innovative methodologies for prevention, assessment and reconstruction might take a lead for local skills and capabilities improvement.	STORM might benefit from more accurate estimation of potential crisis and natural hazards	Proper prevention and intervention schemes can decrease the consequences of disasters and the possibility of potential risks at CH.
	Upgraded risk response development procedures	Innovative and proactive methodologies developed by STORM might well introduce creation of new jobs	The mitigation measures to be provided by STORM for natural disasters on CH, could be maintained by increasing the awareness of Public, Private and Governmental agencies	STORM might trigger some scientific research projects for non-invasive and non-destructive methods of surveying on CH.	Analysis of potential risks on the site by involvement of local people	STORM's approach for local people's support might decrease the recovery period in the post disaster phase and increase the preparedness of the local people towards the consequences of climate change and natural disasters.
	STORM's approach encourages the volunteer participation for all the phases of the project (i.e., definition, planning, and implementation, monitoring and controlling, and closing).	Additional services and technologies developed by STORM may trigger regional economic growth causing stability in the region due to direct and indirect economic impacts		Development of more realistic and down to earth budget estimates for the restoration and up keeping requirements		Techniques developed for qualitative and quantitative risk analyses of the site

Table 8 - STORM Turkey PESTLE analysis

3.6 Portugal

Political

The Portuguese Government program considers Culture as an essential pillar of democracy, national identity, innovation and sustained development, and therefore as a transversal value for several areas of governing.

The present government's strategy is about promoting an integrated management for Culture, establishing, as fundamental priorities: the qualification of state services through the enhancement of budget and human resources; the valorisation of museums and cultural heritage, together with science, technology and universities; the diffusion and increase of the countries' cultural supply, with the support of municipalities; the internationalization of information about Portuguese culture and heritage⁴⁰. These focal points are settled in a strategy of democratization of people's access to culture⁴¹.

In order to fulfil the recommendations of the Hyogo and Sendai frameworks for action, Portugal implemented the PNRRC (National Platform for Disaster Risk Reduction) within the National Civil Protection Commission. PNRRC Activity Plan for 2015-2017 is characterised by the pursuit of cross-cutting measures aiming risk reduction and resilience enhancement, implying the creation of work groups with specific objectives⁴².

Impact on STORM (political) – According to the country's circumstances and its government strategies, it is possible that STORM results, including innovative and efficient tools for the management and preservation of cultural heritage, respond to the government priorities, gaining advantage from the support of policy makers.

Economic

The expected economic growth for 2016-2019 is GDP 1.4% in 2017, stabilizing at 1.5% in the two following years⁴³. Portuguese government has been working in order to encourage economic growth and investment in Portugal by reinforcing support for funding and innovation. Since the level of corporate indebtedness has been acting as a constraint on growth, the government has established as a priority to support, capitalize and internationalize corporations, particularly in the area of new technologies, by

⁴⁰ See the intervention of the Minister of Culture when of the 2017 Budget Debate, at <http://www.portugal.gov.pt/media/22625895/20161110-mc-oe2017-especialidade.pdf> (in Portuguese)

⁴¹ See the EU Work Plan for Culture, at <http://data.consilium.europa.eu/doc/document/ST-16094-2014-INIT/en/pdf>

⁴² See the Portuguese National Disaster Risk Platform Activity Plan, at <http://www.pnrcc.pt/index.php/atividades/> (in Portuguese)

⁴³ See the Projections of the Bank of Portugal for Portuguese Economy 2016-2019, at https://www.bportugal.pt/sites/default/files/anexos/pdf-boletim/be_dez2016_p.pdf (in Portuguese)

facilitating access to structural funds - Portugal 2020. One of the main budgetary strategies is about inclusive growth, mostly through the creation of quality employment in several sectors⁴⁴.

In the Cultural area, the state budget for 2017 foresees a reinforcement of 20 million euro, or an increase of 11%. In DGPC, investments made in 2016 were chiefly directed to the requalification of monuments directly managed, and the budget amounted to € 1.536.978. For 2017, an increase of this figure is to be expected⁴⁵. The weight of Culture in the governmental framework, together with the strengthening of the Tourism industry, increases the valorisation of cultural heritage and encourages local wealth⁴⁶. Considering the current level of development of touring trips in Portugal and based on a 10-year horizon, the speed of growth of this sector can be established at an overall annual growth rate of 10%, with a linear increase of 150%. The cumulative annual growth rate estimated for Portugal is higher than the growth rate of the international touring travel market (5-7% per annum) due to the small volume of activity that Portugal currently has in this sector, thus the potential for relative growth is higher and faster than other destinations which already have a significant volume of activity in this sector. The relevancy of the contribution of municipalities regarding cultural activities, mainly those related to Cultural Heritage funding, which experienced an increase of 56% in 2015 compared to the previous year⁴⁷, has been underlined.

Impact on STORM (economic) – Governmental financial incentive strategies support STORM in what relates to the qualification of companies and skilled human resources, two objectives of the project, aiming to boost the development of new technologies applied to cultural heritage. Since the promotion of employment and territorial enhancement policies remain government priorities in 2017, economical interest in the creation of qualified jobs in the area of Cultural Heritage could be expected.

Social

A relatively recent comparative analysis of the dimension of the cultural sector in several European countries shows that the weight of this area for creating added value (GVA) is lower in Portugal than in other countries, the same happening with the investment in skilled human resources. According to the same study, Culture was the area mostly impacted by 2008 financial crisis; still, the cultural heritage sector displayed a positive growth in the end of the period under review (2008-2012). Since then, investment is mainly focused in:

- Programs designed for the search of new publics, acting as mechanisms of social inclusion and reducing of inequities;
- Rehabilitation of spaces and territories and returning monuments to public use, in order to reinforce identities and preserve cultural memory, also taking into account low population density territories;

⁴⁴ See the Prime Minister discourse in the Biweekly Debate of the National Assembly, «The Economical and Financial Situation», at <http://www.portugal.gov.pt/media/24344870/20170117-pm-ar.pdf> (in Portuguese)

⁴⁵ See the Activity Report of DGPC for 2015, at <http://www.patrimoniocultural.gov.pt/pt/quem-somos/instrumentos-de-gestao/relatorios/> (in Portuguese)

⁴⁶ See the intervention of the Minister of Culture when of the 2017 Budget Debate, at <http://www.portugal.gov.pt/media/22625895/20161110-mc-oe2017-especialidade.pdf> (in Portuguese)

⁴⁷ See “A Dimensão Económica do Setor Cultural” at <http://www.gepac.gov.pt/estatisticas-e-estudos/estatisticas.aspx> (in Portuguese)

- Efforts to guarantee the collaboration of regional and local entities, of corporations, and of the public, in the valuation, preservation and promotion of cultural heritage.

Impact on STORM (social) – European, national and regional cultural funding policies have been reflected the growing awareness that Cultural Heritage is a fundamental factor for the sense of identity of communities and the promotion of social cohesion. An increasingly informed and involved public will also benefit STORM by using and testing implemented crowdsourcing and citizen sensing technologies, and by publicizing them in all kinds of social media.

Technological

The past few years have witnessed a growing effort into the development of scientific and technological competencies and the generalization of public access to internet and new technologies, namely at school level. Although gradual, this paradigm shift is contributing to the development of new ways for the public to relate with cultural heritage, and to facilitate analysis and decision-making processes by those responsible for cultural heritage safeguard. Further steps are being taken to endow the cultural heritage sector with interactive and high-performance tools for data processing and transmission, in order to enhance its integrated and sustained management⁴⁸. It should be noted that the strategic potential of technology in the cultural sector was already identified in the above mentioned comparative analysis⁴⁹, where the role of the ICT in the dissemination of cultural heritage at both national and international level, as well as in the creation of intermediate goods and services, has been highlighted. Still, the weight of this sector in the Portuguese economy in 2012 was relatively low.

Impact on STORM (technological) – Good network coverage in Tróia, together with the require for technological tools applied to cultural heritage, might reinforce general interest in STORM results and turn its future implementation into a reality.

Legal

In Portugal, Decree-laws and Resolutions are discussed, as proposals, in the Council of Ministers, and latter debated and approved by the National Assembly. In 2001, Portugal enacted a general law “establishing the basis of the policy and the regimen for the protection and valorisation of cultural heritage as a reality of uppermost relevance to the understanding, permanence and construction of national identity and the democratization of culture”⁵⁰. Specific regulations for the management and the protection of distinct types of movable and immovable cultural assets have also been developed.

Impact on STORM (legal) – The absence of policies, regulations, normative acts or guidelines for the protection of cultural heritage against climate change and natural disasters highlights the role of STORM

⁴⁸ See Manuel Ferreira e Luís Gouveia, “Património Local e Tecnologias da Informação, Uma Relação Inevitável” (2004), at <http://bdigital.ufp.pt/bitstream/10284/638/2/191-201FCHS2004-5.pdf> (in Portuguese)

⁴⁹ Idem

⁵⁰ Portuguese Heritage Protection Law no. 107/2001, 8 September. Available at http://www.pgdlisboa.pt/leis/lei_mostra_articulado.php?nid=844&tabela=leis (in Portuguese)

as a driving force in the development of new strategic recommendations for the governments' performance in such matters. The fact that the Open Method of Coordination remains the main instrument of cooperation among EU member states means that resources and recommendations developed in the scope of European R&D projects might assume increased relevance in the cultural area.


Ecosystem

With its 987 km of coastline, Portugal is severely affected by coastal erosion and the potential risk of land loss. In conjunction with this reality, the concentration of 75% of the Portuguese population in coastal regions encourages the development of policies destined to ensure adaptation to climate change specifically aimed for the protection, accommodation and planned retreat of such zones and of its cultural heritage⁵¹. Although Portugal entered, in 2017, the top 10 of countries with best-practice climate policies among the 58 industrialized countries that are, together, responsible for more than 90 percent of global energy-related CO₂ emissions, it is still far from having reached a satisfactory and sustainable level. This becomes even more pronounced in what relates to the protection and valorisation of social ecosystems at local, regional and national levels⁵².

Impact on STORM (ecosystem) – Technology progresses in the area of climate change, together with environmental policies, contribute for the public awareness and involvement in the implementation of STORM-developed technologies and the acceptance of practices and methodologies to be proposed.

PORTUGAL - Summary

The following table summarises the main analysis outcomes at Portuguese level:

Troia						
Issues	Democratization of access to Culture	Investment in new technologies and Tourism	Social inclusion and inequity reduction	National technology investment programme	Territories severely afflicted by coastal erosion	Portuguese Heritage Protection Law no. 107/2001, 8 September
	Reinforcement of the government's cultural budget	Inclusive growth, promoting the creation of qualified jobs	Increase of public participation in cultural heritage safeguard	Adoption of interactive and high-performance	Development of policies for coping with climate change	Specific regulations for distinct types of cultural heritage

⁵¹ See a presentation on the LITORAL XXI Governança e Programa de Ação da Agência Portuguesa do Ambiente (COAST XXI Governing and Action Programme of the Portuguese Environmental Agency) http://www.apambiente.pt/_zdata/multimedia/Litoral%20XXI_Governanca_Programa_Acao.pdf (in Portuguese)

⁵² See an online article in DN on the Portugal de volta ao Top 10 na luta contra as alterações climáticas (Portugal back to the Top 10 in the fight against climate change) <http://www.dn.pt/sociedade/interior/portugal-de-volta-ao-top-10-na-luta-contra-as-alteracoes-climaticas-5499863.html> (in Portuguese)

				tools in cultural heritage		
	Adequacy of human resources and services capacitating	Increase of 11% of the government's cultural budget	The need to raise public awareness for cultural heritage as an identity value	Widespread access to the internet and new technologies, even if with regional discrepancies	The inexistence of a social ecosystem surrounding archaeological areas	The absence of regulation regarding the impact of climate change in cultural heritage
	Partnerships in the fields of Science, Technology, Education and Tourism	Cultural heritage rehabilitation leading to the increase of local wealth	Special incentives to Culture in scarcely populated territories	Enhancement of the access to new technologies in schools	The absence of studies on the effects of climate change on cultural heritage	The need to include cultural heritage in Civil Protection legislation
	Internationalization of Portuguese culture	The absence of cost-benefit-efficiency analysis in the area of cultural heritage				
Impact	Political support to STORM activities, in order to implement the project's final recommendations	Potentiate the development and optimization of technologies by recurring to structural funds	Public cooperation in testing and using citizen sensing technologies	Access to an increasing number of available technologies	Public awareness of extreme weather phenomena contributing to an active collaboration with STORM	Inclusion of national laws
	The project's recognition and national visibility	Increase of the number of skilled human resources	Participation of the well-informed public in crowdsourcing	The quality of Wi-Fi and mobile data connections in heritage sites may constrain results	Adaptation of former methodologies for the mitigation of natural phenomena	Harmonization of STORM results to existent norms (emergency or conservation plans, etc.)
	Sharing of experience and know-how of current practices	Investment in local tourism potentiating STORM visibility	Possible dissemination of the project before new audiences	Better data management and processing	Reutilization of knowledge and information about previous natural disasters	
	Assessment of the need for government proceedings		Integration of the civil society's contribution in STORM final recommendations	Creation of new models for STORM data analysis	Wider dissemination due to the association with environmental issues	







Table 9 - STORM Portugal PESTLE analysis

3.7 Overall picture

The following table summarises results collected both at European level and at single country. Main aspects have been identified in order to better focus the viability of the project but also to anticipate the framework for the innovation strategy addressed in Deliverable 11.2.

STORM project - Summary

The following table summarises the main analysis outcomes at project level:

STORM						
Issues	<p>Priority to economic growth and social inclusion.</p> <p>In some countries staff reduction and not recruiting in the public services because of the financial crisis</p>	<p>Priority to economic growth and job creation.</p>	<p>Cultural heritage NOT always a priority in case of emergency.</p> <p>Lack of social awareness about the protection of historic structures</p>	<p>Expensive technology.</p>	<p>Commitment to fight climate change and achieve sustainable growth.</p>	<p>Main legislative framework: Article 167 TFEU.</p>
	<p>Inadequate education policy on cultural assets.</p> <p>Democratization of access to Culture</p>	<p>Culture sector s one of the biggest attractors of tourists creating €415 bln GDP and 15.2mln jobs.</p>	<p>Cultural heritage considered a means for social inclusion.</p> <p>Increase in tourism to CH sites and assets.</p>	<p>Possible lack of internet connection (wi-fi and mobile).</p>	<p>Potential lack of social ecosystem around the sites.</p> <p>Policies on climate change may not include reference to CH.</p>	<p>General guidelines for management of cultural heritage.</p>
	<p>Climate change mitigation.</p>	<p>Only 0.005% of EU expenditures to cultural heritage in 2007-2013.</p> <p>The absence of cost-benefit-efficiency analysis in the area of cultural heritage</p>	<p>Social conditions are different in every state.</p>	<p>Europe 2020 strategy aims at providing more funds for research.</p>	<p>Action against climate change is one of EU priorities.</p>	<p>General legislation on cultural heritage does not impose the implementation of measures for the prevention and mitigation of risks associated to natural extreme phenomena or climate change.</p>

Impact	<p>Cultural heritage NOT a priority as such, but potential asset.</p> <p>Local involvement in the proactive measures can increase affinity and trust between the authorities and the local people.</p>	<p>Cultural heritage is NOT an economic priority. At the same time, Cultural heritage is a main asset for tourism in several countries in Europe.</p>	<p>Citizens' participation and involvement will benefit STORM, raising awareness around cultural heritage protection.</p>	<p>Development of more realistic and down to earth budget estimates for the restoration and up keeping requirements</p>	<p>Need to create social ecosystem to make crowdsourcing effective.</p>	<p>STORM expects to contribute to ameliorate the legal framework by providing policies recommendations, seeking to improve the processes at governmental level.</p>
	<p>Political support to STORM activities, in order to implement the project's final recommendations</p>	<p>STORM may lead to job creation</p>	<p>Need for case-by-case analysis.</p>	<p>Need to consider installing internet connection (wi-fi) in sites.</p>	<p>Need to raise awareness on climate change.</p>	<p>Need to consider national and local legislation.</p>
	<p>STORM as part of Blue Helmets for the protection of culture in crisis areas.</p>	<p>Polices; STORM may contribute to the monuments preservation.</p>	<p>Special incentives to Culture in scarcely populated territories</p>	<p>STORM's demand for innovative methodologies for prevention, assessment and reconstruction might take a lead for local skills and capabilities improvement.</p>		<p>Proper prevention and intervention regulations can decrease the consequences of disasters and the possibility of potential risks at CH.</p>

Table 10 - STORM overall PESTLE analysis

3.8 Conclusion

Notwithstanding some differences among the different countries and some relevant economic and political issues (in Turkey and Greece in particular), some patterns emerged out of the country based analyses:

- At the political level, all the involved countries are committed and promote the preservation and valorisation of cultural heritage. This is also reflected from a legal point of view, as several states have specific legislation to protect their cultural heritage sites;
- On the economic side, the culture sector is generally not a top priority, and this is also reflected in the relatively low public spending for technology and research dedicated to culture. However, cultural heritage is a source of job creation, both directly and indirectly, in all the considered states, with entire communities economically depending on major cultural sites;
- At the social level, to a certain extent and with differences among countries, cultural heritage sites are natural means of aggregation even without any structured facilitating organization. This means that CH sites can potentially become the pivots of social ecosystems organized around them, should this intrinsic aggregating power be channelled into well-defined projects.

Given these common patterns, we can conclude that STORM has a meaningful potential for success and further expansion. In our view, the project would boost already existing socio-economic best practices to create social ecosystems around cultural heritage sites. Such ecosystems would involve, in different manners, all the beneficiaries of CH sites (workers, tourists, local communities...), gathering them together in organized structures to promote the protection and valorisation of the sites. Moreover, creating a socially active network of people around CH sites would increase the effectiveness and rapidity of responsiveness in case of potentially destructive events.

By actively involving people in the protection and valorisation of the cultural heritage, STORM will act as a creator of social and economic added value for the sites it will be applied to.

4 Viability oriented SWOT analysis

In this section, an introduction and explanation of the overall SWOT analysis are reported. Further details and a dynamic view will be provided in D11.2 for each PUDF and it will be revised and updated during the project in the PUDFs wiki section. Figure 2 shows STORM SWOT Analysis:

STORM - SWOT Analysis

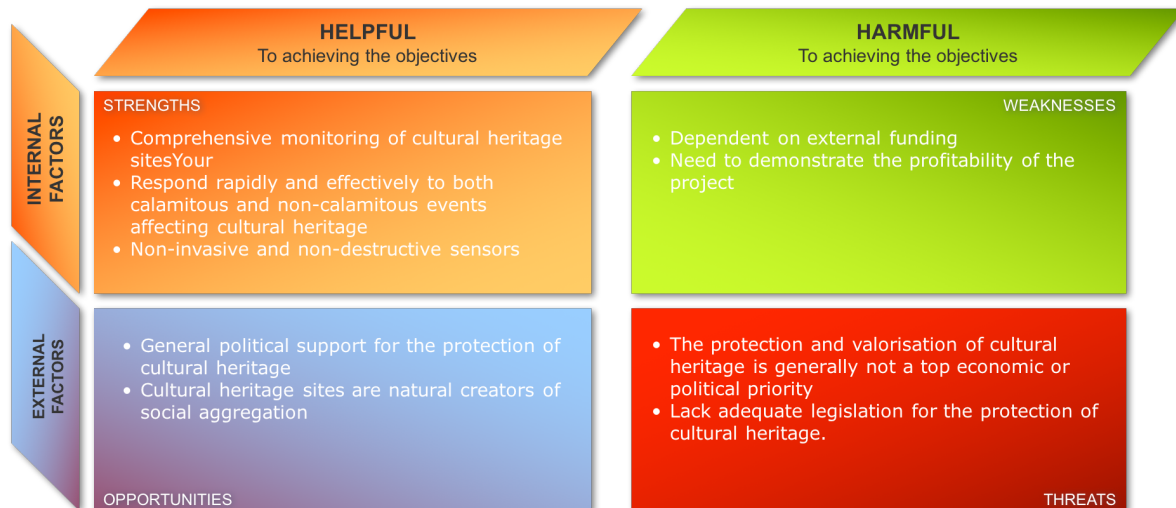


Figure 1 - STORM SWOT Analysis

4.1 Strengths

The current strengths:

- **Comprehensive monitoring of CH sites:** The use of cutting-edge technological instruments and the greater human attention and sensibility for CH preservation, represent an ideal and innovative combination that foster an unprecedented comprehensive monitoring of cultural heritage sites.
- **Respond rapidly and effectively to both calamitous and non-calamitous events affecting CH:** The collaboration and knowledge-sharing between experts and the public, combined with automated reasoning mechanisms, makes it possible to respond rapidly and effectively to both calamitous and non-calamitous events affecting cultural heritage.
- **Non-invasive and non-destructive sensors:** All the data sensing tools are non-invasive and non-destructive. This enables the best possible preservation of cultural heritage.

4.2 Weaknesses

The current Weaknesses:

- **Dependence on external funding:** The project is dependent on external funding because of the elevated cost of some of its valuable elements. Highly technological systems and sensors are expensive and need to be funded by public institutions and/or public private partnerships. Therefore, there is a need to demonstrate the profitability of the project.
- **Need to demonstrate the profitability of the project:** The project relies on the participation of tourists and communities living nearby CH sites. These groups may have other priorities and interests or may have few time to dedicate to crowdsourcing.

4.3 Opportunities

The current opportunities:

- **General political support for the protection of CH:** Nowadays, politics are becoming more and more interested and sensitive to the safeguarding and protection of Cultural Heritage. In all the involved countries, there is a general political support for the protection of cultural heritage. This support creates a favourable environment for the implementation of the project.
- **CH sites are natural creators of social aggregation:** Cultural heritage sites are natural creators of social aggregation. This mechanism facilitates the crowdsourcing of fundamental information for the protection of cultural heritage, as well as quick responses to destructive events. The natural tendency of CH sites to create indirect revenue (hotels, restaurants...) could represent a stimulus for local communities in order to be involved and valorise as much as possible cultural heritage through an effective participation to STORM.

4.4 Threats

The current threats:

- **The protection and valorisation of CH is generally not a top economic or political priority:** Cultural heritage protection and valorisation is not always one of the top economic or political priorities. This is mainly due to the current economic crisis.
- **Lack of adequate legislation for the protection of CH:** Some states lack adequate legislation for the protection of cultural heritage. This might result in lack of funding and/or bureaucratic problems that could represent an obstacle for the STORM expansion.

5 Sustainable viability

The main objective of this deliverable is to support project team in managing activities in order to achieve a sustainable viability for the overall project. Mata, Feurst, Barney models⁵³ have been adopted in order to sustain this objective and to keep project viability under control:

A four steps check procedure has been defined as follow:

- 1) Each STORM outcome is compared with the confidence to achieve it. If the outcome is not considered achievable it will be deleted and updated with an achievable one and exploitable results or it will be deeply reviewed.
- 2) Once the outcome passed to second step, it will be evaluated, taking into consideration the identified barriers to its viability and all the efforts will be devoted to remove them or at least to mitigate their effect on outcome viability. This step could be a circular loop.
- 3) The outcome will be submitted to stakeholders to get their involvement and related comments/suggestions. The main goal is, in this phase, to involve the maximum representation of stakeholder to gain value for the outcome itself.
- 4) Last step is the evaluation of potential long term viability for the outcome and, also this step could be a circular loop dedicated to improve the potentials to reach a satisfactory level of confidence.

⁵³https://books.google.it/books?id=yWEU_hE-pk4C&pg=PA30&lpg=PA30&dq=Mata,+Feurst,+Barney+model&source=bl&ots=XCPKsDguWZ&sig=JBoub2bYUtLZB0OsHqbjErF1kxA&hl=it&sa=X&ved=0ahUKewjrtuWVocfRAhUCNxQKHOTC4sQ6AEIlzAB#v=onepage&q=Mata%2C%20Feurst%2C%20Barney%20model&f=false

Figure 3 shows STORM Viability Check Model:

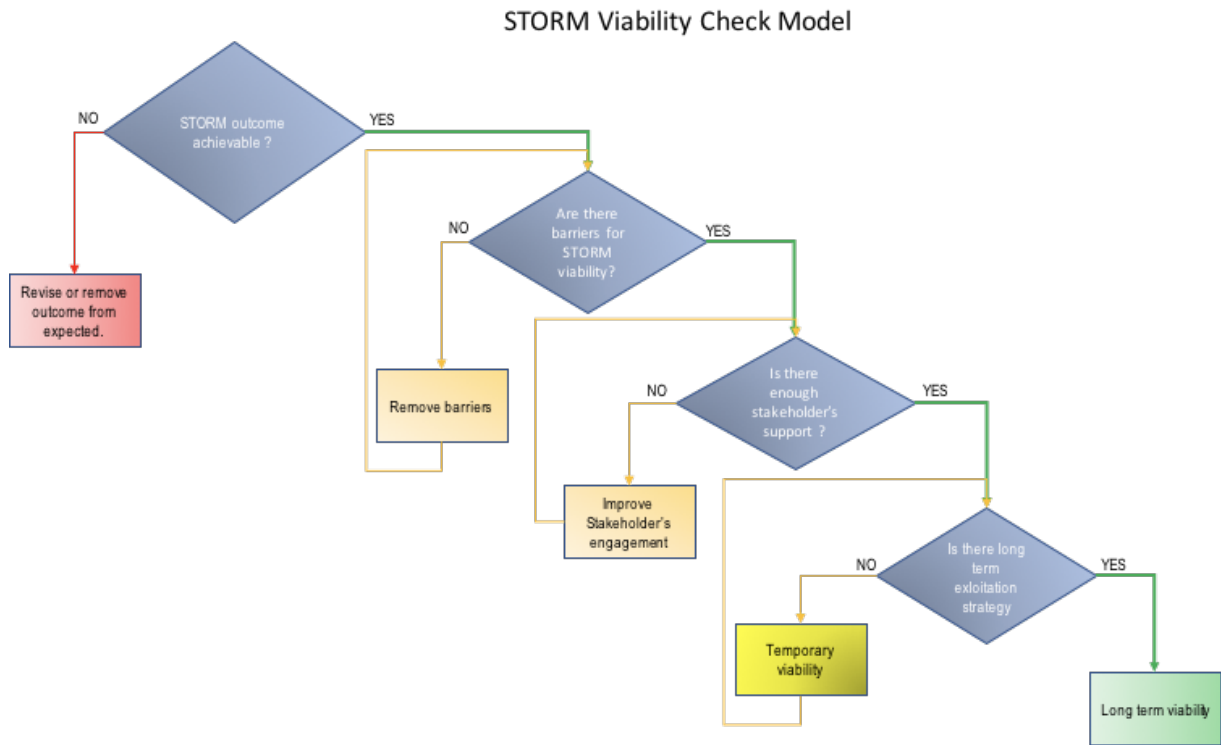


Figure 2 - STORM Viability Check Model

The viability check model together with Innovation Strategy, defined in D11.2, will be the base for the exploitation pathway followed by STORM project team and will be applied to all PUDFs.

6 Funding mechanisms needed

During the first months of STORM project, the reactions of all the engaged stakeholders reveal that STORM objectives are shared with a wide community and that a growing ecosystem has been created around them. In this period, the general lack of funding or planned funding to deal with mitigation of climate changes affecting with disasters or long term deterioration cultural heritage, has been underlined.

Funds generally come from public administrations at different levels: Europe, Country, Region, Municipality or local Community. Their financial power is mainly conditioned by funds availability and political choices. Those funds generally are provided to the local cultural heritage authority.

Other funds could come from visitors' tickets and funds go directly to the same local authority (apart from some exceptions). In some countries (UK), lotteries are contributing to major restorations and also to mitigate climate changes effects (see floods in UK)⁵⁴.

Sponsorships and external funding are also key funds providers⁵⁵, with some constraints not completely acceptable in terms of exclusive use of rights for a certain number of years.

Once funds are collected, they could be used for intervention aiming at reducing the impact of climate changes on cultural sites.

Figure 4 shows STORM Funding Mechanism Schema:

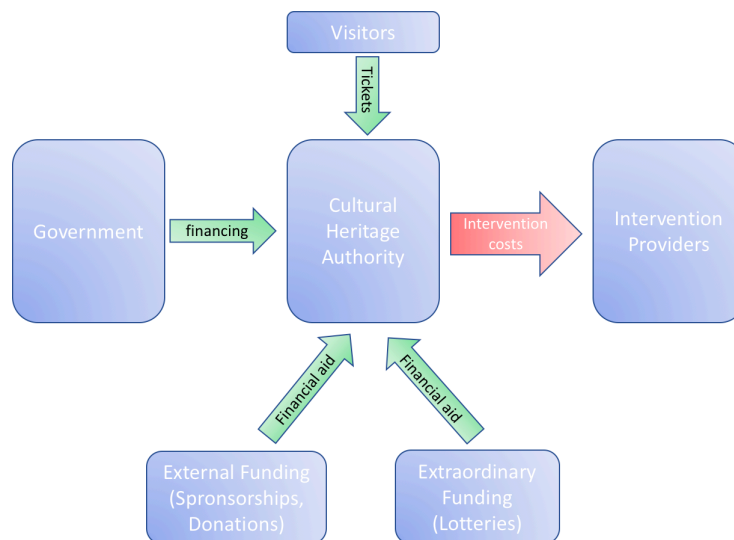


Figure 3 – STORM Funding mechanism schema

The final decision outside emergency situations is taken by local Heritage Authority, that proceeds with the procurement procedures to acquire services and instruments needed.

⁵⁴ SPRAY, C. J., & COMINS, L. (2011). Governance Structures for Effective Integrated Catchment Management-Lessons and Experiences from the Tweed HELP Basin, UK. Building Knowledge Bridges for a Sustainable Water Future, 78.

⁵⁵ Saca, A. (2013). Fashionable Sponsorship: Fashion Corporations and Cultural Institutions.

7 Stakeholder roles

In the STORM project, stakeholders have a wide range of multidisciplinary competences and a highly-differentiated decision empowerment. An elaboration of IAP2'S public participation spectrum has been applied⁵⁶.

Figure 5 shows STORM revised IAP2'S Participation Spectrum:

		INCREASING IMPACT ON THE DECISION				
		INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
STAKEHOLDERS' PARTICIPATION GOAL		To provide STORM Stakeholders with clear and understandable information concerning how to mitigate climate changes effect on Cultural Heritage.	To provide Stakeholders feedback on analysis, alternatives and/or identified solutions.	To work together Stakeholders to ensure that their aspiration are consistently understood and considered.	To partner with Stakeholders in most aspect of decision, including the development of alternatives and the identification of the preferred solution.	To share final decisions with Stakeholders and take note of their position.
PROMISES TO STAKEHOLDERS		STORM project team will keep stakeholders informed.	Periodic meeting are going to be organised to listen and acknowledge concerns and aspirations. STORM team will seek Stakeholders' feedback on draft proposal.	Meetings organised to consult Stakeholders will have a workshop session where concerns and aspirations could be discussed with the project team.	Stakeholders will collaborate in formulating solutions and policies. Their advices and recommendations will be considered in the decision to the maximum extend possible.	STORM team will try to keep into consideration Stakeholders positions.

Figure 4 - STORM Revised IAP2'S participation spectrum

The main strategy to involve stakeholders in the project is based on their involvement in some decisions taken during the project (the red arrow in Figure 5 shows the increasing impact on the decision). This represents a challenging objective but it is totally in line with the challenging nature of STORM project. The experience, during this first 12 months (without a pilot running), is very comfortable due to the reaching of almost 13 stakeholders engaged.

Nine categories of stakeholders have been defined (see table 2). These categories are divided in three macro categories considering the STORM exploitation type supported: Scientific, Sustainability and Business. In the first year of the project, apart from Sensoro, most of stakeholders comes from the cultural authorities area. This is good in terms of project viability because the institutional commitment is the first key factor of success for STORM project. Moreover, SMEs and other actors which support the project in its exploitation phase, could join.

It is clear for the project team that the politics engagement and the related stakeholders roles could change during project phases, according to type of involvement needed and to the nature of decision taken. The role of stakeholders, beyond their weight (discussed in chapter 2.2 of the current document), is definitely

⁵⁶ IAP2 - Public Participation Spectrum:

http://c.ymcdn.com/sites/www.iap2.org/resource/resmgr/Core_Values/WEB_1510_IAP2_Core_Value_Awa.pdf?hhSearchTerms=%22stakeholders+and+engagement%22

going to change during the project life and activities according to the relationship between roles and project pathway.

Nowadays, the priority is to design the correct strategy for innovation (D11.2) and, following the IAP2 methodology, to better understand the external requirements that could drive the project to its exploitation.

The team is experimenting ways to be involved in “external” pilots of the project where the inner stakeholders invest their funds to obtain sensors and technologies, while the project could provide knowledge and training. Those type of enlargements could be a tangible base for the future deployment of STORM.

At this stage of the project stakeholders main roles could be summarised in the following ones:

- 1) Institutional support: to verify methodological and technical choices done in the project;
- 2) Academic/Research involvement: to be updated on existing and forthcoming researches;
- 3) Industry view: to get the market view and tune technologies;
- 4) Socio/Political visibility: to create conditions for the future (and present), project application.

The mechanism to deal with stakeholders and their roles is at its early stage so team effort are focused in consolidating a protocol that could be followed in all the 7 countries involved in the project.

8 Expected social and community impact

Measure and prioritise aspects in STORM deployment that could affect a better social and community impact is a strong requirement.⁵⁷

The introduction of innovative methodologies and practises to manage Cultural Assets in order to face climate change could represent a benefit for the site surrounding community. The following methods⁵⁸ suggest some indicators, proposed by the STORM project team in the first phase of the project with the aim to revise them at the end of the pilot experience in order to verify if early achievements will be present as benefits for pilot sites communities.

Measurement	Purpose	Indicator
1) Jobs/Household income	Estimate job creation and income generated by historic rehabilitation activity or other preservation related employment	<u>Dioclethian's Baths</u> New jobs (external personnel subcontracted by law) in assessment and preservation activities will be created (2-3 person per year) which will produce tax payments to the local and national governments.
		<u>Epharet</u> New jobs (i.e. person years of employment) generated directly and indirectly by preservation activities. Tax payments (local government and state taxes, personal and business income)
		Direct impact (expenditures on labour and purchases of materials by preservation activities). Indirect impact (expenditures associated with industrial goods and services by firms that provide preservation materials)
		<u>Mellor</u> Employment of local businesses/contractors who will provide services for conservation activities and mitigation practices. Expenditure on services and tools related to adopted practices. Indirect job creation potential in surrounding towns as a result of increased tourist numbers from rehabilitation of CH.

⁵⁷ Rypkema, Donovan, Caroline Cheong, and Randall Mason. "Measuring economic impacts of historic preservation." Advisory Council on Historic Preservation (2011).

⁵⁸ Rypkema, Donovan, Caroline Cheong, and Randall Mason. "Measuring economic impacts of historic preservation." Advisory Council on Historic Preservation (2011).

		<p><u>Ephesus</u></p> <p>Innovative and proactive methodologies developed by STORM might well introduce creation of new jobs. Especially ones that focus on measurement and continuous assessment of the site may cause involvement of local people (residents or site representatives) to the project.</p> <p>Therefore, additional services and technologies developed by STORM may trigger regional economic growth causing stability in the region due to direct and indirect economic impacts.</p> <p>STORM can cause social improvement via increased awareness of the preventive techniques by society. Especially local involvement in these proactive measures can increase affinity and trust between the authorities and the local people.</p> <p>One of the major aims of STORM should be to create a sustainable site management system which prolongs and stabilizes the local economic activity by keeping the site at the highest health condition, rather than becoming a major factor of economic growth.</p> <hr/> <p><u>Troia</u></p> <p>New jobs; increase of annual conservation investment; purchase of equipment related to mitigation; new activities related to survey and preservation.</p>
<p>2) Property Value</p>	<p>Demonstrate impact on property values of being within local historic district</p>	<p><u>Dioclethian's Baths</u></p> <p>As the Baths of Diocletian are a public site, as well as a Roman monument and a Museum, it is not easy to state their property value and its consequent increment through the project activities. Impact on the surrounding district is however possible: a better preservation of the Monument area could cause further improvement in the number of visitors, thus helping to redevelop the district, which is today affected by problems connected to the presence of the railway station (theft, high crime rate, etc.).</p> <hr/> <p><u>Epharet</u></p> <p>Property value (cost per m²) fluctuation in the historic centre as compared to property values in the rest of the city. Median sale price in the historical centre in comparison to prices in the surrounding areas. Median rent price in the historic centre in comparison to prices in the surrounding areas.</p>

		<p>Age and current building situation, as well as, other construction activity in the area (building reinforcement in cases of static stability and further renovation of buildings in the historic centre as a result of rehabilitation/preservation activities and comparisons with new construction).</p> <p><u>Mellor</u></p> <p>With rising recognition of the Mellor sites, there is some potential for rising property values in the locality. This is, however, dependant on whether tourism positively or negatively impacts house prices.</p> <p>New development, on a large scale, is unlikely in the surrounding area, as Mellor is within boundaries designated by national government as “green belt”. Green belt is a policy which aims to restrict sprawling urban growth. Essentially, zones of green belt surround the UK’s largest conurbations, e.g. Greater Manchester, and development is restricted within these zones.</p> <p><u>Ephesus</u></p> <p>Ephesus is among the favourite tourist attraction regions worldwide. Ease of transportation via air and seaports makes it a local touristic hub. Mild Mediterranean climate throughout the year also creates favourable conditions for visitors. The area is prone to natural disasters including earthquakes, floods and fires. Therefore, proactive and preventive measures are very important for sustainable protection management of the site. Methods for prevention and early detection of natural hazard damages are invaluable. These tools strengthen the protection of CH and also increase the power of safety measures for visitors. The top priority of the Ephesus site is safe and proper operation and maintenance of the site year around. Economic activities created by the visitors largely affect the locals. Policy makers at political levels receive the clear message of the locals on the subjects of protection and sustainable development of the site.</p> <p><u>Troia</u></p> <p>Property buyers at Tróia look for beach proximity, location and infrastructure. The only exception to this tendency would be the Hotel planned for the remodelling of the 20th century palace house inside the ruins, the only reconstruction allowed since it will reuse a modern house already built in the ruins. Being inside the historic placement it will increase its value price and stand out this hotel among others of the same kind. Presumably, also the Eco-resort planned near the site (in</p>
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		<p>UNOP4), could have more or less 5% over the price rate because of the archaeological site proximity.</p> <p>However, the increase in recognition with the classification as World Heritage Site is expected to have a positive impact on the property value and enhance the prospects of new business development.</p> <p>The research on climate change, their impacts, the existence of resilience tools and other related framework in the Peninsula may also benefit the sales know-how in the enhancement of the area, satisfying and attracting different types of buyers, more concerned with safety and prevention.</p> <p>The visibility of the dissemination activities performed during the project may promote the tourism destination and increase real estate investment.</p>
<p>3) Heritage Tourism</p>	<p>Quantify absolute economic impact of heritage tourism and incremental impact relative to other forms of tourism</p>	<p><u>Diocletian's Baths</u></p> <p>In the last 3 years the Baths of Diocletian's visitors have almost doubled. A better preservation of the area could lead to a further improvement; press-clipping impact of STORM project and initiatives could also lead to a further improvement of visitors, particularly among the ones interested in heritage and in environmental and ecologic issues.</p> <hr/> <p><u>Epharet</u></p> <p>Number of admission tickets at sites and museums Numbers of heritage tourists in comparison to other types of tourists (e.g. eco-tourists, recreational tourists, religious tourists) Lodging: number of overnight stays. Socioeconomic profile and spending patterns of heritage tourists Annual, or other, return to sites/historic centre</p> <hr/> <p><u>Mellor</u></p> <p>In 2011 Heritage tourism was estimated to contribute over £26 Billion to the UK economy. Importantly, between 2005 and 2011 there was a 47% increase in day trips by Britons, and a 13% rise international visits between 2007 -- 2011⁵⁹.</p> <p>At Mellor, tourism could be monitored by communication with the crowdsensing apps and sensors. This could give estimates of increasing tourists numbers, furthermore, this could be used to determine types of tourists. For example, those who interact with different aspects of the site.</p>

⁵⁹(<http://www.telegraph.co.uk/finance/newsbysector/retailandconsumer/leisure/10172008/Heritage-tourism-generates-26.4bn-towards-UK-economy.html>)

		<p>Also, number of tours conducted by the trust, as well as the number of people registered on each tour will show changing tourist numbers. Spending in the wider local economy e.g. shops, cafes and pubs from the increasing visitors at Mellor’s CH, will have socio-economic impacts which it may be possible to quantify.</p> <p><u>Ephesus</u></p> <p>STORM’s risk management procedures specifically designed for the historical heritage sites might develop alternative scenarios for the uninterrupted operation of the site following a natural disaster. Also, proper prevention and intervention schemes can decrease the consequences of disasters and the possibility of potential risks at CH. STORM’s approach for local people’s support might decrease the recovery period in the post disaster phase and increase the preparedness of the local people towards the consequences of climate change and natural disasters.</p> <p><u>Troia</u></p> <p>10% of Cultural Touring annual growth at Portugal (which includes heritage tourism). At Tróia Peninsula, we should verify: the number of admission tickets; the number of packs with other areas from the resort (ex. Hotel, Atlantic Ferries); economic impact of the ruins in other areas of the resort; historic events; activities in the site; community engagement; press clipping impact of STORM initiatives; comparison study of the ruins visitors with the number of customers of the resort.</p>
<p>4) Environmental Measurement</p>	<p>Demonstrate the contribution of historic preservation to broader “sustainable development,” “Smart Growth,” “energy conservation,” and environmentally sensitive or “green” community planning</p>	<p><u>Dioclethian’s Baths</u></p> <p>STORM activities could improve the redevelopment of the Railway station district surrounding the Baths. The use of local materials and skills as well as the implementation of energy saving instruments will improve the sustainability and the environmental impact of the site.</p> <p><u>Epharet</u></p> <p>Revitalization of urban districts. Use of existing public transportation and infrastructure. Use of local materials and skills Energy saving features like massive walls and small windows Use of durable materials that age well by developing patina Reduced environmental impact</p> <p><u>Mellor</u></p> <p>Increasing awareness of drivers of change, and reducing environmental impacts.</p>

		<p>Using knowledge of environmental issues which the site faces to ensure future development is sustainable and environmentally sensitive. Involvement of local government and local groups may lead to wider adoption of greener, more environmentally friendly, community planning. Imparting knowledge of environmental issues, and how they are impacting local CH, may encourage diversification of development and public transport infrastructure.</p> <p><u>Ephesus</u></p> <p>Considering the requirements for the expected outcome of the project, STORM is thought to have a high potential for good impact. A systematic and organized approach is needed to improve the risk management procedures for risk mitigation of natural hazards as well as risk reduction plans.</p> <p><u>Troia</u></p> <p>Raise awareness to climate changes and increase environmental sensitiveness. Reuse of materials for restoration works.</p>
<p>5) Community resilience attitude</p>	<p>Share safeguarding decision with the community to stimulate a wider resilience attitude</p>	<p><u>Dioclethian's Baths</u></p> <p>Organization of educational activities in order to inform and inspire the Museum public and community not only about the Museum collections but also about the environmental threats it faces (educational programmes, tours etc.). To involve the community and to raise awareness about environmental and climate change risks affecting Cultural Heritage also a number of meetings could be organised, Also local and national authorities responsible for cultural and environmental issues (Mibact. Comune di Roma etc.) should be involved</p> <p><u>Epharet</u></p> <p>Outreach to local associations that have demonstrably exhibited interest in community and preservation activities (e.g. association of friends of historical centre) Demonstration of economic benefits of preservation activities to local community Organization of educational activities in order to inform and inspire the community (educational programmes, tours etc) Investigation and publication of local histories through involving the community Number of public meetings during policy design and implementation processes Number of community driven collaborative processes supported by local authorities</p>

		<p><u>Mellor</u></p> <p>Organisation of educational activities to impart knowledge and stimulate interest. Publications in local and wider archaeological publications. Involvement in local community events. Increased number of tours and wider involvement of other environmental and local history organisations. With possible collaboration in programmes.</p> <p><u>Ephesus</u></p> <p>Local communities can provide support to the project if they can tangibly understand the impact on existing living conditions of strategies for the preservation of CH and innovative methodologies to be developed at STORM. For this reason, PR activities within STORM must focus on disseminating the product and useful information to be obtained from the project. STORM's methodologies should involve residents at some required levels of processes. Local people might observe but may not be able to assess the seriousness of climate change on CH. STORM's methodologies can include components to improve the reflection of the climate change by local people. Voluntary engagement at all age levels has many benefits for both STORM's success and fort the preparedness of the local people for potential risks.</p> <p><u>Troia</u></p> <p>Organization of internal events to promote the engagement of local community in the preservation and safeguarding of the Roman Ruins (ex. Earths on or Minds on experiences). Implementation of external activities or meetings to increase a collaborative resilience attitude and community driven resolutions. Enhancement of deserted area that can be at use by the local and regional community for educational, cultural and social purposes. Enrol local authorities in the planning and implementation of the prevention needs and in the emergency plans.</p>
<p>6) Citizen voluntary engagement in cultural sites safeguard</p>	<p>Investigate how a wide solidarity addressing cultural heritage protection could be stimulated by STORM initiatives</p>	<p><u>Dioclethian's Baths</u></p> <p>Dissemination of STORM and of its challenges through different activities including conferences, local and national press, social media etc. Cooperation with professional stakeholders (e.g. police force, fire-fighters etc.) in a coordinated effort to stimulate volunteering in helping detect and discover conservation problems and communicating them through social media etc.</p>

		<p><u>Epharet</u></p> <p>Publication of STORM and its purposes (conferences, local and national press, social media etc.) Cooperation with professional stakeholders (e.g. police force, fire-fighters etc.) in a coordinated effort to stimulate solidarity Invitations to non professional associations/groups to participate as volunteers in preservation activities, such as the cleaning of the hillsides of Fortress (e.g. to university departments of preservation and other related studies, schools, scouts and so forth) Participatory monitoring mechanisms with diverse stakeholders</p> <hr/> <p><u>Mellor</u></p> <p>Involvement of students and non-professionals, including local community groups in STORM related activities. Volunteers could participate in the monitoring and maintenance practices that Mellor adopt. Dissemination of Mellor’s STORM activities in local media, and wider coverage at national events. Cooperation with local government. Solidarity with local government with respect to STORM could see STORM initiatives adopted across their domain. Visitors could be informed about STORM activities using crowdsensing app, which could stimulate solidarity with STORM initiatives.</p> <hr/> <p><u>Ephesus</u></p> <p>The mitigation measures to be provided by STORM for natural disasters on CH, could be maintained by increasing the awareness of Public, Private and Governmental agencies. STORM’s demand for innovative methodologies for prevention, assessment and reconstruction might take a lead for local skills and capabilities improvement</p> <hr/> <p><u>Troia</u></p> <p>Development of crowdsensing and crowdsourcing tools (ex.app); training and dissemination activities.</p>
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Table 11 - STORM social and community impacts

9 Conclusions

It was a great experience to share ideas and strategies for the project viability in the consortium. The consortium is a multidisciplinary one, where competences range from very technical to pure humanistic ones.

The viability pathway is clear, although, at this stage, some conditioning factors need to be investigated and assessed. The consortium is well motivated and viability issues have been addressed in all the five countries involved in the pilot phases. The general outcome of the investigation and the monitoring tools STORM project has in place (PUDFs management and Viability monitoring) represent useful instruments to face a remote lack of viability and to provide the proper solution.

The level of commitment is probably not the same in all countries involved in the project, both for local policies and for government attitude toward climate changes effects on cultural heritage. The project will stay (also thanks to ICCROM being an associated partner) in line with the European position, giving to each country all the instruments to facilitate the adherence to that position.

This deliverable is the first one of a series (related to WP11), dealing with STORM in relation to its future opportunities. There are pending issues but the team will be ready to better understand them and try to overcome them.

The climate change is something we have to deal with and, all the proposals will be aimed at the mitigation of its dangerous effects on the historic patrimony and, the work carried on until now, shows the good position held in order to achieve these objectives.

Finally, it is interesting to see how much the project is aligned with future article 3 of “FIRST DRAFT OF A PRELIMINARY TEXT OF A DECLARATION ON ETHICAL PRINCIPLES IN RELATION TO CLIMATE CHANGE”⁶⁰ going to be released by UNESCO.

“Article 3: Avoiding Harm

Since climate change not only threatens the sustainability of the Earth’s living and non-living systems, the integrity of species, the welfare of nations, peoples, local communities and individuals, but already has been causing harm and negative consequences, some of which are irreversible, States and other social actors should take all measures within their powers to:

- A. *formulate and implement policies and actions to mitigate and adapt to climate change;*
- B. *anticipate, avoid or minimize harm, wherever it might emerge, from climate adaptation and mitigation policies and actions, and any other possible measures aiming at alleviating the impacts of climate change;*
- C. *seek transnational cooperation before deploying new technologies that may have transnational impacts;*
- D. *remedy residual harm from climate change, and climate adaptation and mitigation policies and actions.”*

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⁶⁰ <http://www.unesco.org/new/en/social-and-human-sciences/themes/comest/ethical-principles/>