

Guatemala – Study on Disaster Risk Management of Cultural Heritage



The case of Antigua Guatemala



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Disaster Risk Management of Cultural Heritage. The case of Antigua Guatemala

Acronyms

AECID	Spanish Agency for International Development Cooperation
CIV	Ministry of Communications, Infrastructure, and Housing
CNPAG	National Council for the Protection of Antigua Guatemala
COLRED	Local Coordinator for Disaster Reduction
CONRED	National Coordinator for Disaster Reduction
COMRED	Municipal Coordinator for Disaster Reduction
DaLA	Damage and Loss Assessment
DECORBIC	Department of Conservation and Restoration of Cultural Property
DIG	Disaster Imagination Game
DRM	Disaster Risk Management
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GIRRD	Directorate of Integral Management for Disaster Risk Reduction
ICH	Intangible Cultural Heritage
IDAEH	Institute of Anthropology and History
INE	National Institute of Statistics
INGUAT	Guatemalan Institute of Tourism
INSIVUMEH	National Institute of Seismology, Volcanology, Meteorology, and Hydrology
MCD	Ministry of Culture and Sports
MINEDUC	Ministry of Education
MoHCA	Ministry of Home and Cultural Affairs of Bhutan
NRD	Disaster Reduction Policies
PDNA	Post Disaster Needs Assessment
POT	Territorial Organization Plan
SE-CONRED	Executive Secretariat of the National Coordinator for Disaster Reduction
SEGEPLAN	Secretariat for Planning and Programming of the Presidency
UCEE	State Building Construction Unit
UNESCO	United Nations Educational, Scientific, and Cultural Organization

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The workshop on Disaster Risk Management and Cultural Heritage, held in the city of La Antigua Guatemala on March 26th and 27th, 2019, was organized and executed jointly by the Executive Secretariat of the National Coordinator for Disaster Reduction (SE -CONRED) and the Ministry of Culture and Sports (MCD), at the Spanish Cooperation Training Center in La Antigua Guatemala, with technical and financial support from the World Bank through GFDRR.

The roadmap is the result of the efforts and work of the workshop participants.

EXECUTIVE SUMMARY

Hazards are natural, disasters are not. While natural events such as earthquakes or volcanic eruptions cannot be predicted, it is known that they are recurrent and will happen again. Risk assessments are essential to prevent or mitigate disaster risk as much as possible and be prepared to act in case of emergency. The concept and practice of Disaster Risk Management (DRM) has evolved considerably in recent decades, including the study of climate change as an aggravating factor in the effects of hydrometeorological events. However, cultural heritage is not usually considered as a priority sector to be taken into account in the DRM plans of most countries.

1. Disasters and Heritage: the case of Antigua Guatemala and the Volcán de Fuego eruption

Guatemala is located in one of the most prone regions to suffer natural events and is among the countries with more exposure to economic risk, with 83 percent of its GDP located in areas of high risk of natural hazards¹. From 1975 to 2018 the most significant disasters in Guatemala provoked damages and losses amounting to US\$9.8 billion, representing an annual average cost of US\$228 million, equivalent to 0.30 percent of GDP (2017)². At the same time, Guatemala has three UNESCO World Heritage Sites (Antigua Guatemala, Archaeological Park and Ruins of Quirigua, and Tikal National Park), as well as around 2200 pre-Hispanic archaeological sites, and a large number of colonial and republican monuments and buildings.

The case of La Antigua Guatemala is a particularly interesting example of the interaction between disasters and heritage. The city has been marked by catastrophes throughout its history, becoming the important legacy that is nowadays, recognized as a World Heritage Site by UNESCO in 1979.

The current location was the third settlement of the original capital, Santiago de los Caballeros de Guatemala. After the first relocation, the current Ciudad Vieja was founded and destroyed by a lahar from the Volcan de Agua in 1541. The capital city was then reestablished in present-day Antigua, in 1542, and lasted until the Santa Marta earthquakes destroyed it in 1773. Once again, the capital was moved definitively to Guatemala City. The inhabitants who survived were progressively rebuilding their city and began to refer to it as Antigua Guatemala.

Antigua Guatemala was particularly relevant in colonial times, since it played a key role in the historical formation of the territoriality of the modern American continent. Also known as the Kingdom of Guatemala, it encompassed and had jurisdiction over most of Central America through southern Mexico. During more than two and a half centuries, it was one of the most important political, economic, religious, educational, and cultural centers of the continent. Thanks to the partial abandonment of the city and the regulations prohibiting the repair and construction of new buildings, the ruins and city's 16th century Renaissance grid pattern were preserved as signs of identity of Antigua.

But the impact of natural events on the city does not end in historical times. To mention some of the most devastating, the M8.3 and M7.5 earthquakes in 1942 and 1976 respectively, hurricanes Mitch in 1998 and Stan in 2005, tropical storm Agatha and mudslides from Volcan de Agua in 2010, and the eruptions of the Volcán de Fuego in 2017 and 2018, keep Antigua under threat.

¹ gfdrr.org/en/guatemala

² Damages and losses data are extracted from post-disaster needs assessments compiled by GFDRR.

During the eruption of Volcan de Fuego on June 3, 2018, the pyroclastic cloud reached the historic city causing ash falling over streets, squares, and buildings, affecting cultural heritage. The accumulation of ash on the roofs was aggravated by the rain during the following days, leading to different types of problems, such as causing leaks, especially serious in historic buildings. The cleaning process lasted approximately one month, and tons of ash were collected. The estimated cost of cleaning and removal the volcanic material was estimated at Q360,000³.

In addition to the cultural heritage and daily life in Antigua, the tourism sector was affected during the first month, partly due to some misinformation from international media, which transmit a more catastrophic and widespread view of what was for the city of Antigua Guatemala. The Municipality and the Guatemalan Institute of Tourism (INGUAT) launched communication campaigns, with a cost estimated at Q1.2 million⁴, to clarify the situation and recover the usual tourism⁵.

2. DRM for Cultural Heritage

Establishing DRM plans for cultural heritage is essential to protect these historical legacies from the natural hazards to which they are exposed. A key action for the integration of these two disciplines lies in the necessary collaboration between the respective agencies, authorities, and specialists from both sectors, locally and nationally. The integration of cultural heritage in the national DRM plans is as important as the integration of DRM measures into the management plans of the heritage sites. DRM for cultural heritage should:

- **Consider all the components related to the culture of the place.** For example, in the case of Antigua Guatemala, the risk analysis cannot be limited to the ruins of the old city or the heritage buildings, but need to include other aspects such as vernacular architecture, the characteristic baroque style—so called *Barroco Antigüeño*—, movable heritage, etc., at the same time that considers intangible aspects such as traditions and celebrations, for instance the *Semana Santa* (Easter), which increases the number of visitors unfamiliar with the area, who must be taken into account in the emergency response plans.
- **Adapt and implement all DRM processes to cultural heritage, including:**
 - 1) **Prospective management:** identification of specific risks for cultural heritage including secondary hazards, such as the risk of fire after earthquake—crucial, for example, in old wooden churches with candles; and implementation of prevention measures through planification, territorial development, and building regulations, including heritage protection from physical hazards.
 - 2) **Corrective management:** design and implementation of vulnerability reduction measures for exposed heritage assets, including structural reinforcement and establishment of financial mechanisms to develop them.
 - 3) **Reactive management:** preparedness and response measures, including emergency plans, evacuation routes, and trainings on heritage protection during disaster situations, among others. Priority is always saving lives, and in a second moment, it is essential to have experts to properly act on cultural heritage and avoid irreplaceable losses. Finally, cultural heritage specialists and professionals should be in charge of assessing damages, and proposing and carrying out restoration treatments, including measures to strengthen resilience in order to avoid or at least mitigate the effects of future disasters.
- **Include an assessment of both the response capacity and the existing technical capacity** to deal with cultural heritage and ensure that the necessary decisions and measures are taken to safeguard it.

³ DaLA, Julio 2018

⁴ Idem.

⁵ According to the Statistical Bulletin of Tourism in 2018 a total of 2,405,902 visitors entered, 14% more than in 2017.

In this regard, it is also important to evaluate if the local community is prepared to provide assistance in case of emergency, through drills and workshops, since they are usually the first ones that can access the area and help and collaborate with authorities in the protection of their movable and immovable heritage.

- **Integrate a cultural values assessment, and their relationship with the communities**, including local, national, and international, since many cases require the need of prioritizing actions. For example, some heritage sites with less architectural value may have greater religious value for the local community.

The objective and expected result of the disaster risk analysis from the cultural heritage perspective is to identify the most vulnerable components, taking into account all the previously mentioned factors, such as historical value, importance to the community, impact on the tourism sector, etc., in order to establish the needs and priority actions to be carried out within the DRM framework, **with the ultimate goal of protecting, conserving, and fostering knowledge of the cultural heritage for future generations.**

3. Roadmap to integrate DRM into Guatemala's cultural heritage

The roadmap⁶ to integrate and strengthen DRM in the cultural heritage of Guatemala is the main result of the workshop held on March 26 and 27, 2019, in Antigua Guatemala, with both DRM and cultural heritage professionals. The workshop offered a space for representatives of different entities and professionals from different fields to share their experiences and actively participate in the design of specific joint proposals, with the objective of strengthening inter-institutional cooperation to establishing DRM for Guatemalan cultural heritage.

The workshop included participants from the Executive Secretariat of the National Coordinator for Disaster Reduction (SE-CONRED), the Ministry of Culture and Sports (MCD), the Secretariat for Planning and Programming of the Presidency (SEGEPLAN), the Municipality of Antigua Guatemala; and the UNESCO Office in Guatemala, among others⁷.

During the workshop, the participants presented the work systems of their different institutions focused on connecting DRM with the cultural heritage. The workshop participants discussed strengths and weaknesses, as well as challenges and opportunities to collaborate. As a result, they identified a series of measures to be carried out, organized around six areas of action:

1. **Inter-institutional collaboration:** DRM for cultural heritage is a multidisciplinary process that does not correspond to a single institution, it must be developed through collaboration and cooperation between different actors. A key action is to foster capacity building for both technical personnel and also local communities, to ensure that there is awareness of the risk affecting cultural heritage as well as commitment to protect and conserve it.
2. **Generation of information:** The participants highlighted lack of information related to certain aspects necessary to carry out risk analysis for cultural heritage. In this regard, it would be necessary to prepare: i) inventories of heritage assets, and historical documentation, ii) studies of natural hazards and vulnerability, and iii) databases that combine both types of information, that need to be regularly updated.

⁶ In this context, the roadmap is understood as a document written and agreed between national actors and international experts, with the objective of identifying opportunities for capacity building and institutional strengthening.

⁷ For more information see section V of this document.

3. **Risk communication for cultural heritage:** It is fundamental to establish clear communication channels to share the information related to heritage at risk between practitioners but also with local populations. For example, some measures could be including risk and heritage issues in school education programs, including risk management measures in tourism plans, and conducting campaigns in local communities, among others.
4. **Pre-disaster technical actions:** For example, specific risk identification programs focusing on cultural heritage, through the selection and prioritization of heritage sites or buildings to carry out preventive restorations; and update emergency response plans including advice from heritage experts.
5. **Post-disaster technical actions:** For example, development of mechanisms for damages and losses assessment of cultural heritage assets, such as standard forms for rapid evaluation to collect key data and information from movable and immovable heritage assets.
6. **Administration and logistics:** Support measures to simplify and facilitate administrative processes, as well as improve inter-institutional communication; for instance, reducing the procedures for providing intervention permissions, ensuring they are endorsed by heritage conservation professionals, and establishing focal points in each institution.

4. Conclusions and recommendations

Guatemala faces the challenge and the opportunity to strengthen the protection of its cultural heritage against the natural hazards that threaten its territory. Earthquakes, volcanic eruptions, landslides, hurricanes, and floods—these last two increased by the action of climate change—lurk a rich cultural heritage conserved and evolved over millennia of history. Mayan archaeological sites, vestiges of great pre-Columbian civilizations, Hispanic colonial cities, and among others, the development of a unique architecture to adapt European styles to the characteristics of the American territory, are part of the great Guatemalan cultural heritage to be preserved in the face of the 21st century new challenges.

DRM for cultural heritage has emerged and improved during the last decades demonstrating its effectiveness to protect historical legacies around the world. The cases of Japan and Bhutan⁸ demonstrate the efficiency of connecting DRM and cultural heritage conservation. In the case of Guatemala, it is essential to connect the work being carried out by institutions dedicated to DRM, such as SE-CONRED, INSIVUMEH, SEGEPLAN, with the work related to cultural heritage from the MCD and its Directorate of Cultural and Natural Heritage, CNPAG, INGUAT, and international institutions such as UNESCO and AECID.

Based on experiences and good practices internationally shared to establish DRM for cultural heritage, a series of key actions can be extracted, to be adapted to each national context. It should be noted that these actions should be considered as part of a continuous process with several phases, and based on collaboration and inter-institutional cooperation, connecting authorities and professionals at both national and local levels. The list that follows is not exhaustive, but rather a guide for developing short, medium and long-term roadmaps, depending on the country's priorities.

Recommendations to establish priority actions:

1. Consolidate a specific **DRM for cultural heritage working group** with members from different institutions and disciplines and agree on the basic objectives and common commitment.

⁸ See section IV of this document.

2. Identify the **information needed to develop DRM strategies for cultural heritage** including, but not limited to:
 - Exhaustive inventory of the heritage sites/assets of the country, classified according to previously established categories;
 - Maps and analysis of the natural hazards affecting those heritage sites;
 - Vulnerability studies and risk calculations based on the above.
3. Develop and implement **the joint roadmap with short, medium, and long-term priorities**; including the development of the information in point 2 if it is not yet available and, among others:
 - Identify priority actions at the national level, based on the analysis of the current situation, to establish risk reduction strategies for cultural heritage;
 - Develop the necessary documents to contribute to the process of risk reduction (for example: risk assessment for heritage, guidelines for preparedness, and priority actions in case of emergency in heritage sites, etc.);
 - Establish protocols for emergency response and resilient recovery at the national level (including the development of a recovery strategy);
 - Analyze specific cases to establish risk reduction measures at the site level; and carry out case studies to test the implementation of specific actions;
 - Establish a timeline of action and collect lessons learned throughout the process, to be applied in successive phases.
4. Ensure that **local communities are involved** during the whole the process, since they are the key to protect their cultural heritage, and often the first available to act in case of emergency.
5. Develop **communication campaigns** including understanding risk, actions to reduce it, and measures to protect cultural heritage sites, taking into account that usually are touristic areas with people unfamiliar with the area, the hazards, and sometimes the language.
6. Establish the necessary **financing measures** to develop and maintain the DRM plans for cultural heritage, including budget for emergency situations.

Investment in protection and promotion of cultural heritage has proven to be profitable. The regeneration of historic centers and cities, including measures to increase resilience, significantly improves the living conditions for both inhabitants and visitors. At the same time, it makes cities to become more attractive and competitive, which increases the possibilities of attracting private investments and foster job creation.

Ultimately, cultural heritage is the reflection of the people who identify with that culture and, therefore, protecting it against disasters is to protect the community and preserve its legacy for future generations.



Photo of Volcán de Agua from the Spanish Cooperation Training Center in La Antigua Guatemala (BMG, 2019)

Disasters have marked the history of Antigua Guatemala since its foundation, bringing it as the legacy that is today—UNESCO World Heritage Site since 1979—and at the same time keeping it under constant threat. Assessing the city situation through a disaster risk management (DRM) of cultural heritage perspective is fundamental to preserve it into the future.

I. INTRODUCTION

Natural events are recurrent. Geophysical hazards such as earthquakes or volcano eruptions cannot be predicted, but it is known that where they have happened in the past, they will happen again. In the case of hydro-meteorological hazards, frequency and intensity are increased by the action of climate change. Guatemala is located in one of the most hazard prone regions, threatened by earthquakes, volcanic eruptions, landslides, fires, hurricanes, and floods. Additionally, other hazards such as fires usually affect ancient structures in particular, becoming one of the main hazards to specific cultural heritage assets.

However, natural hazards only lead to disasters when its effects negatively affect human life, and the consequences depend on the vulnerability of the assets and population exposed to these hazards. The concept and practice of Disaster Risk Management (DRM), understood as a safe development strategy, has evolved during the last decades from an approach focused almost exclusively on disaster response, towards a broader approach focused on risk understanding, prevention, and reduction, without demeriting the importance of having strong preparation and response systems. However, other priorities generally relegate cultural heritage in the agenda of local and national governments, and disaster risk plans do not include heritage, leaving at risk areas, buildings or other assets of high historical value.

In this regard, conducting risk assessments and establishing risk mitigation and emergency preparedness measures is fundamental. In case of emergency the priority is always to save lives, but in a second moment, acting quickly on cultural heritage is essential to preserve legacies that could otherwise be lost forever.

1. Context

After the eruption of Volcan de Fuego on June 3, 2018, the World Bank launched a technical assistance to support the Government of Guatemala in the development of the impact assessment and the recovery strategy strengthening resilience against future events.

The present study has been developed as part of this technical assistance, and includes: (a) a brief analysis of the current situation in Guatemala regarding the DRM practice focused on cultural heritage; (b) a case study on risk affecting cultural heritage and the link with the disasters that have marked the history of the city of Antigua Guatemala; and (c) examples of international good practices in DRM for the protection and conservation of cultural heritage. Additionally, it includes: (d) a series of conclusions and recommendations aiming to establishing priority actions, at short, medium, and long-term, to strengthen the protection of Guatemala's cultural heritage in the face of natural hazards and in post-disaster resilient recovery; and (e) a preliminary roadmap aiming to reach that objective.

2. Disasters in Guatemala⁹

Guatemala is among the countries most affected by climate events and geophysical hazards. Located on the Ring of Fire between the Atlantic and Pacific Oceans, the country is frequently affected by earthquakes, landslides, and volcanic eruptions. Guatemala ranks 11th in the world among the countries most affected by climate-related events¹⁰ such as floods, hurricanes, and extreme weather. Recurrent droughts related to El Niño in the Dry Corridor endanger crops, livestock, and food security. Rapid urbanization and climate change further increase disaster risk in the country. As a result, vulnerable households may only be one disaster away from falling below the poverty line or sliding further back into poverty.

Guatemala's economic and social development continue to be regularly interrupted by earthquakes, volcanic eruptions, hurricanes, and flooding. Major disasters in Guatemala include the 1976 earthquake, which resulted in more than 23,000 deaths and damages estimated at 20.7 percent of GDP; Hurricane Mitch in 1998, which caused estimated damages of 4.2 percent of GDP; Hurricane Stan in 2005, which caused damages estimated at 4.1 percent of GDP, the eruption of the Pacaya volcano and the Agatha tropical storm both in 2010, which caused damages at 3.9 percent of GDP; and the eruption of Volcan de Fuego in 2018, which caused damages at 0.3 percent of GDP. In all of these events the Government had to interrupt ongoing service delivery and development programs in sectors such as health and education to finance immediate needs for recovery and reconstruction.

In total, from 1975 to 2018 the most significant disasters in Guatemala provoked damages and losses amounting to US\$9.8 billion. This represents an annual average cost of US\$228 million, equivalent to 0.30 percent of GDP (2017). While disasters originated by hydrometeorological hazards are more frequent, their economic impacts have not exceeded 5 percent of GDP. Seismic events are less frequent but can have more devastating impacts (see figure 1).

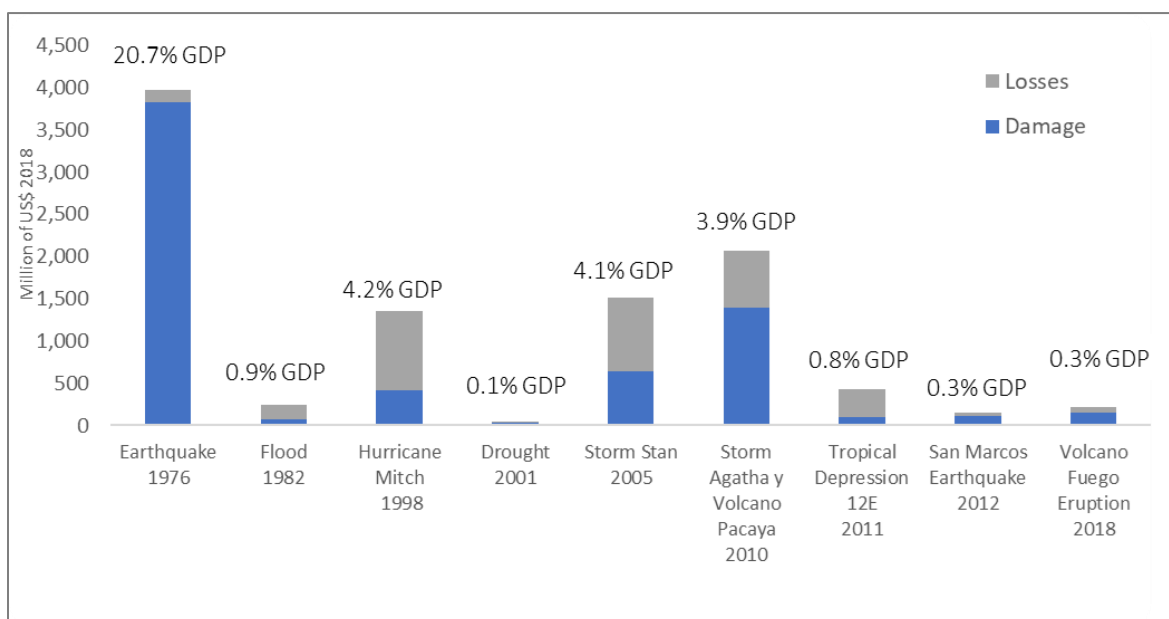


Fig. 1: Damages and Losses from the Most Significant Disasters in Guatemala (2018 US\$, millions and percentage of GDP) (Source: Damages and losses data extracted from post-disaster needs assessments compiled by GFDRR).

⁹ Source: World Bank

¹⁰ Global Climate Risk Index 2018, Germanwatch ([germanwatch.org/de/14638](https://www.germanwatch.org/de/14638)).

II. VOLCAN DE FUEGO AND GUATEMALAN CULTURAL HERITAGE

1. Analysis of the current situation.

Losses in cultural heritage have a double impact, both affecting the economy and the historical legacy of local communities, cities, and even nations. After the eruption of Volcán de Fuego in June 2018, the loss for visitors was estimated in 88,564 foreign and 226,461 residents; based on the drop in the number of visits, the losses for the tourism sector were estimated in the amount of Q302.5 million (Q192.4 for foreign visitors and Q110 for domestic tourists).¹¹ This episode highlights the need to consider cultural heritage, and related sectors such as tourism, within the framework of DRM.

At the global level, Guatemala ranks fifth¹² among those with the highest economic risk exposure to three or more natural hazards, more than 83 percent of Guatemala's GDP is located in areas at risk to natural hazards. At the same time, the country has a rich and varied cultural heritage, including 3 World Heritage Sites (Antigua Guatemala, Archaeological Park and Ruins of Quirigua, and Tikal National Park) and 21 in the UNESCO Tentative List¹³.

Guatemala has around 2200 archaeological sites dating from pre-Hispanic times (from around 2000 BC to 1524 AD), in addition to the numerous monuments, buildings, and churches from the colonial era (1524-1821), republican (1821-1898) and contemporary (1898-1944). While this constitutes a source of archaeological and historical wealth, it is also a challenge due the difficulty of monitoring, maintaining, and protecting all these sites and artefacts (Crasborn and Navarro, 2011).

At institutional and legal level, Guatemala has policies, institutions, and laws for both DRM and cultural heritage. The main authority for DRM issues is the National Coordinator for Disaster Reduction (CONRED), created in 1996 as the entity in charge of preventing, mitigating, supporting, and participating in the rehabilitation and reconstruction of damages caused by disasters (conred.gob.gt). Its Executive Secretariat (SE-CONRED) is the national body legally responsible for taking concrete actions to reduce the impact of natural events, aiming to avoid negative impacts for sustainable development and increased poverty. Regarding cultural heritage, the Ministry of Culture and Sports (MCD) is the highest authority, through the Directorate of Cultural and Natural Heritage, which is responsible for generating proposals and institutional actions to create strategies and mechanisms for the protection and conservation of the cultural and natural, tangible and intangible heritage of the country (mcd.gob.gt).

DRM and Cultural Heritage Legal Framework:

DRM	Cultural Heritage
The <i>National Policy for Disaster Risk Reduction</i> , implemented by the <i>Executive Secretariat of the National Coordinator for Disaster Reduction</i> (SE-CONRED), has the objective of increasing resilience and reducing vulnerability, in populations and peoples (cultures), in the productive processes, and in the territories at risk of disaster, as a foundation to improve the quality of life and the safe development of Guatemala. For this, it is based on four basic pillars: 1) risk identification, analysis, and assessment; 2) preparation of capacities and conditions for risk management; 3) risk management, including	The <i>National Law for the Protection of Natural and Cultural Heritage</i> , <i>Decree 81-98</i> objective is the protection, defense, valorization, rescue, recovery, investigation, and conservation of the assets that integrate the National Cultural Heritage, and defines immovable cultural properties as architectural monuments and their elements, including murals and applied decoration, groups of elements and architectural ensembles (including urban landscape), and paleontological and archaeological sites (pre-Hispanic and colonial). Article 30 establishes that any intervention in heritage for restoration purposes

¹¹ According to DaLA, July 2018.

¹² gfdrr.org/en/guatemala

¹³ whc.unesco.org/en/statesparties/gt

mitigation, risk transfer, and adaptation; and 4) post-disaster recovery.	requires internationally accepted technical procedures, in order to preserve the heritage.
The <i>Secretariat for Planning and Programming of the Presidency</i> (SEGEPLAN) is in charge of formulating the international cooperation policies and programs in consultation with the corresponding state entities, as well as coordinating the process of planning and programming of public investment at sectoral and public and territorial level, among others (Cordova 2012).	The <i>National Policy of Culture and Sport</i> dictates that cultural and natural heritage constitutes a source of wealth and identity for the nation, and its research, conservation, and social use, must benefit and improve the quality of life of local communities and the population in general.

The above table reflects the current division between DRM and Cultural Heritage issues. While both areas have been legally developed and established, and have clearly defined action frameworks, there are no joint cooperation strategies to connect risk management with Guatemalan cultural heritage.

2. Damage assessment after Volcan de Fuego's eruption

As part of this study, a series of interviews were conducted with key stakeholders related to cultural heritage of Antigua Guatemala¹⁴, in order to assess the impact of the Volcan de Fuego eruption over the historic city, and in general the perception of disaster risk.

During the eruption on June 3rd, 2018, the ash particles emitted by the volcano reached the historic city and kept the area cloudy. The authorities recommended wearing masks and covering the eyes, and an alert was activated for possible spreading of lava. In addition to the direct damage that the ash could cause on the city monuments—several of them preserved as open-air ruins—there is the impact in the tourism sector, since Antigua Guatemala is the main touristic center in the region, as well as an international benchmark for learning the Spanish language, with numerous academies and schools.

The interviews were carried out around three topics: i) the impact observed on cultural heritage assets, including intangible heritage, the city, and the tourism sector; ii) other recent disasters which impacted cultural heritage; and iii) the perception of risk existing among the population. The main ideas extracted from the interviews are summarized below:

- **Antigua Guatemala was not as affected by the eruption of Volcan de Fuego as other areas.** The situation was very serious in the areas that suffered the arrival of pyroclastic material and lava, including a high number of deaths, which activated the national solidarity. In contrast, the situation in the city of Antigua was not considered serious, and the neighbors started support activities for the populations in the severely affected areas.
- **However, some international media gave a more catastrophic and widespread view,** mistaking the Department of Sacatepéquez, to which Antigua Guatemala belongs, with the city itself, and disseminating that it had been more affected by the eruption of the volcano than the reality. Some embassies issued travel alerts that were canceled later. The Municipality and INGUAT developed a communication strategy to clarify the situation. The airport was affected for just a few hours (24-48) with the air traffic interrupted while the runways were cleaned and until there was no risk of air suspension particles.
- **In Antigua there were no pyroclastic flows, but there was ash falling over streets and buildings, affecting heritage assets,** which was aggravated with the rain of the following days. The accumulation of ash on roofs combined with persistent rain causes different types of problems: the ash compacts and

¹⁴ Including staff from the Municipality and CNPAG, as well as UNESCO Guatemala and AECID.

retains water causing leaks, especially serious in historic buildings; due to high mineral content, ash promotes the growth of vegetation on roofs, affecting maintenance; it can also affect the pipes, clogging them and even causing them to collapse.

- **The cleaning process—including roofs, streets, public spaces, etc.—lasted approximately one month, collecting tons of ash.** Not all the heritage buildings could be cleaned due to lack of resources, and lack of cleaning system or guidance for cultural heritage. According to the CNPAG inspection, the most affected heritage assets were: roofs, courtyards mud tiles, cobblestone streets, buildings on process of being restored, interior and exterior of fountains, and rain channels, which were entirely covered by ash.



Fig. 2. *Templo de las Capuchinas*' courtyard and fountain, covered by ashes [Photo: CNPAG, 2018].

- **Regarding intangible cultural heritage (ICH), some celebrations were affected**, such as the *Patronal a Santiago Apóstol*, but in general, the community of Antigua was not impacted—just alteration of daily life, suspension of school activities, cancelation of some events in case the volcano activity would increase. However, other affected communities had a negative impact on their ICH, which seems not to have been evaluated.
- **Hotel providers commented that the presence of tourists in hotels was significantly reduced.** In particular, the Hotel Reunion was affected, having its golf course buried under ashes. But in general, the tourism sector recovered soon thanks to the communication campaign. The entrance of national and foreign tourists in heritage monuments decreased during the period of one month and after that was regulated again.
- **Regarding the impact of other recent disasters affecting cultural heritage, the interviewees mentioned the frequent seismic movements of the area, which progressively deteriorate the historic buildings.** After the M6.9 earthquake on June 22, 2017, the CNPAG Department of Restoration conducted an inspection in different monuments of the city, noting several detachments in walls and facades, but without significant structural damage. Throughout 2018 several earthquakes caused fissures and cracks, affecting especially some facades that had not received maintenance.
- **In January 2019 a fire affected three buildings in Calle del Arco de Santa Catalina**, causing serious damage in roofs, walls, and wooden elements in doors and windows.

- **Curiously, flood impact was not particularly mentioned**, despite being one of the main hazards—two rivers surround the city from north-east and south—and a recurring event with an almost annually frequency, as reflected by the local press¹⁵.
- **In general, despite the history of disasters that have marked the evolution of the city, the perception of risk is low.** People is used to feeling tremors and although it is known that there was a major earthquake in 1976, they do not keep it in mind. There is agreement on the need to increase risk awareness, both seismic and meteorological, as well as health risk: there is a part of the population with chronic malnutrition, and precarious levels of food would facilitate the spread of epidemics during a disaster situation.
- **Despite the personal reaction of the population, whose levels of solidarity were reflected during the eruption, there is a perception of lack of public resources** and state capacity to coordinate population efforts and provide the infrastructure or equipment needed to respond to emergency situations (for example, lack of reserves and organization in shelters) and, in a second moment, to act on the cultural heritage.

3. Considerations.

The integration of cultural heritage in DRM plans and vice versa, integrating DRM measures in heritage site management plans—including all key processes (risk assessment, risk prevention and mitigation, disaster preparedness and response, and resilient recovery)—constitutes an effective solution for its protection. The experience after the eruption of Volcan de Fuego together with other previous and recurring experiences, such as seismic movements and floods, highlights the need to take into consideration the Guatemalan cultural heritage and act to prevent irrecoverable losses during emergency situations, when usually there are other urgent priorities.

Each city and each country is different and has its own cultural heritage, but there are some common questions that can help to reflect and understand each situation, to act accordingly:

- What can be lost in terms of cultural heritage during a disaster: historic sites, irreplaceable art, ancient traditions? How these losses can affect local communities, nations, and the international community?
- What can be the repercussion at an economic level: decrease in number of tourists, disappearance of craft markets or creative industries, unemployment increase?

Some basic measures to be taken into account include:

1. **Establish what is consider cultural heritage** at a national level, including but not limited to:
 - Tangible (monuments, archaeological sites, vernacular architecture, secular or religious historic buildings, museums and collections, etc.)
 - Intangible (traditions, celebrations, arts and crafts, folklore, cultural landscape, etc.)
 - Local, regional, national, and who is the authority or has jurisdiction.
2. **Based in the previous, establish an exhaustive inventory of the cultural heritage assets of the country**, compiling databases and relevant documentation (historical, photographic, etc.), including the geographical location. And from there:
 - Identify the associated cultural values (historic, artistic, religious, social, architectural, etc.)
 - Establish a classification and order of priority taking into account all possible factors (historic and international relevance, importance for the local community, etc.)
 - Try to establish an economic value associated with each asset as accurate as possible.

¹⁵ www.prensalibre.com/ciudades/sacatepequez/lluvias-causan-inundaciones-y-vivienda-colapsada-en-antigua-guatemala/

3. **Locate the cultural heritage assets in national and local hazards maps.** In collaboration with the DRM authorities:
 - Establish the physical vulnerabilities of each asset according to the hazards it faces, state of conservation, previous restoration works, etc.
 - Assess the risk for each heritage asset, in order to identify the elements in the most critical situation to prioritize interventions.
4. **At a heritage site level**, similar considerations apply:
 - Develop an inventory of all the different assets in the site (for example, different areas in an archaeological zone, architectural elements and artistic collections of a church, etc.)
 - Collect all possible information related to the area (geography, hydrology, climate, vegetation, fauna, etc.), in particular hazards assessments.
 - Carry out risk analysis for the site with DRM experts and identify measures to prevent and/or mitigate disaster risk.

Based on the information generated with these actions, a second phase of interventions would include the development of strategies to reduce risk, with specific measures designed and adapted to the characteristics of each particular case.

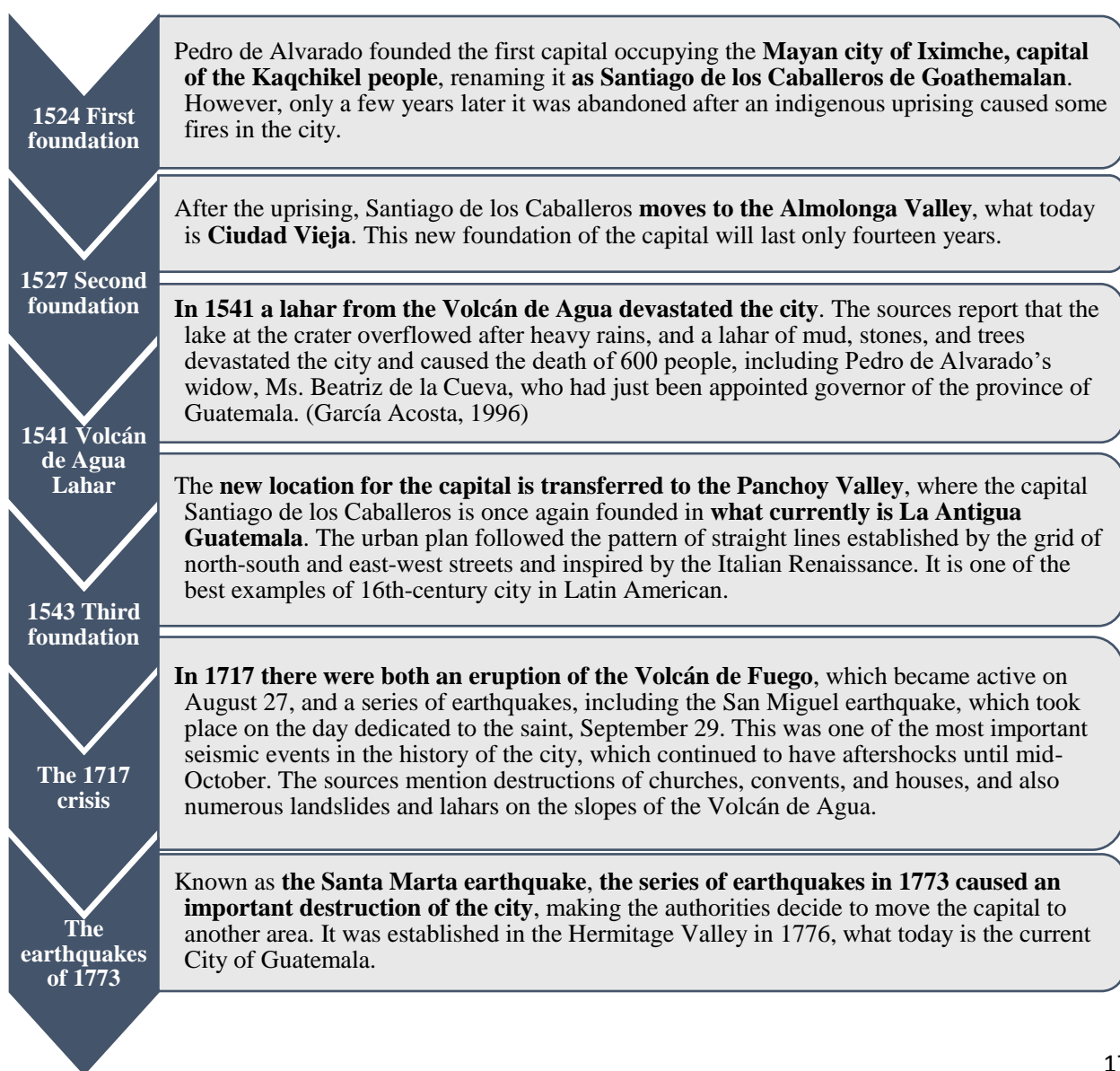
In addition, it is important to take into account the universal value reached by some cultural heritage sites, such as the city of La Antigua Guatemala, which due to its historical importance and its own evolution characterized by the succession of disasters, became a UNESCO World Heritage Site. The responsibility to protect these places increases because in addition to be part of the identity of a community or nation, are part of the legacy of humanity, recognized at a global level.

III. CASE STUDY: HISTORY AND DISASTERS IN ANTIGUA GUATEMALA

Antigua Guatemala was particularly relevant in historic times, since it played a key role in the historical formation of the territoriality of the American continent. It was founded to serve as the capital of the Captaincy General of Guatemala, directly relying on the Council of the Indies. Also known as the Kingdom of Guatemala, it encompassed and had jurisdiction over most of Central America through southern Mexico, including the present-day nations of Costa Rica, Nicaragua, Honduras, El Salvador, Belize and Guatemala, the Mexican state of Chiapas, and the Panamanian provinces of Chiriquí and Bocas del Toro. **During more than two and a half centuries, it was one of the most important political, economic, religious, educational, and cultural centers of the continent.**

Disasters have characterized the history of the city since its foundation, though. Actually, the current location was the third establishment of the capital Santiago de los Caballeros de Guatemala, transferred again and definitely in 1773 to the current Guatemala City.

1. Historical evolution



Despite the destruction, transfer of the capital, and partial abandonment of the city in ruins, some of the inhabitants remained in what began to be called Antigua Guatemala. From the mid-1800s, the area began to be repopulated because of the agricultural production, particularly coffee.

Thanks to the partial abandonment of the city in 1776 and the regulations prohibiting the repair and construction of new buildings, the ruins and city's 16th century Renaissance grid pattern were preserved as signs of identity of Antigua Guatemala. In 1944 Antigua was listed as National Monument; in 1965 was denominated Monumental City of America; and in 1979 was included in the UNESCO World Heritage list. At the same time, the list of disasters affecting the city has kept growing, including M8.3 and M7.5 earthquakes in 1942 and 1976 respectively, hurricanes Mitch in 1998, and Stan in 2005, tropical storm Agatha, and mudslides from Volcán de Agua in 2010, and earthquakes and eruptions of Volcán de Fuego in 2017 and 2018.

2. Attributes and cultural values

Nowadays, Antigua Guatemala has numerous cultural attributes, both tangible and intangible, with different and important associated values, from the ruins, historical buildings, museums, and cultural centers¹⁶, to intangible aspects such as the 16th-century Renaissance grid pattern and the cultural landscape, characterized by the volcanoes that surround the city. Also, one of the unique characteristics of the historic architecture of Antigua is the so-called *Barroco Antigüeño*, which consists of a regional adaptation of the Baroque style, designed to withstand the seismicity in the region.

Antigua was also a center for the exportation of religious images and statues to the rest of the American continent and to Spain during the 17th and 18th centuries. This tradition remains present in the celebrations during *Semana Santa* (Easter). Intangible culture in Antigua, especially during these religious festivities, is therefore another fundamental sign of identity, and attract an increasing number of visitors every year. These include the traditional *alfombras* –carpets over the cobblestone streets made by dyed sawdust, flowers, vegetables, etc., and the *procesiones* –processions with images representing the Passion of Christ carried on huge wooden platforms.

In matters of cultural heritage legislation, the *Protective Law of the City of La Antigua Guatemala, Decree 60-69 (1969)* establishes the heritage conservation area, as well as the properties subject to a special conservation regime. Through this law, the *National Council for the Protection of La Antigua Guatemala* (CNPAG) was created. Its mission is the protection, restoration, and conservation of movable and immovable properties, either national, municipal or private.

In 2010, the *Master Plan of La Antigua Guatemala* was developed following UNESCO guidelines to safeguard the declared heritage, including an extensive database of the historic centre (López García y Martín Hernández, 2012). However, an extensive plan for risk management has not been developed yet for this historic city, despite the recommendations of different experts (Palma, 2016a y Córdova, 2012).

The city of Antigua Guatemala is an example of historical resilience whose characteristic cultural heritage is partly the result of the continuous history of disasters that doesn't end yet. Despite the damages caused by the eruption of Volcan de Fuego were not destructive in this World Heritage city, it has revealed the need to consider cultural heritage, not only in Antigua but also at the national level, within the sphere of DRM.

¹⁶ The complete inventory of buildings is available at Centro Virtual Cervantes: cvc.cervantes.es/artes/ciudades_patrimonio/antigua/paseo/default.htm

IV. DISASTER RISK MANAGEMENT FOR CULTURAL HERITAGE

1. Why connecting DRM and Cultural Heritage?

Losses in cultural heritage caused by disasters usually have a direct impact on a country's economy by negatively impacting several economic activities, including the tourism sector, in addition to its social dimension. For instance, after the M7.1 earthquake in Mexico, 1,847 heritage building were damaged, including 351 historic monuments, 14 museums, and 8 archaeological areas – nearly 20 percent of the overall economic losses.

However, cultural heritage is not usually considered as a priority sector to protect against disasters and recover after those. One of the reasons is because it is difficult to talk about monetary value, since it has an incalculable added value, which depending on each case can be historical, artistic, religious, social, etc. But the impact that investments have on local economies can be quantified, and very positively.

2. Identification and communication of risks to tangible and intangible assets allows site managers to work to protect sites, communities to plan and prepare for likely scenarios, and policymakers to prioritize investments to manage the risks, as well as spurring action by many stakeholders. Understanding this, we can help reduce irreplaceable losses and manage the economic repercussions.

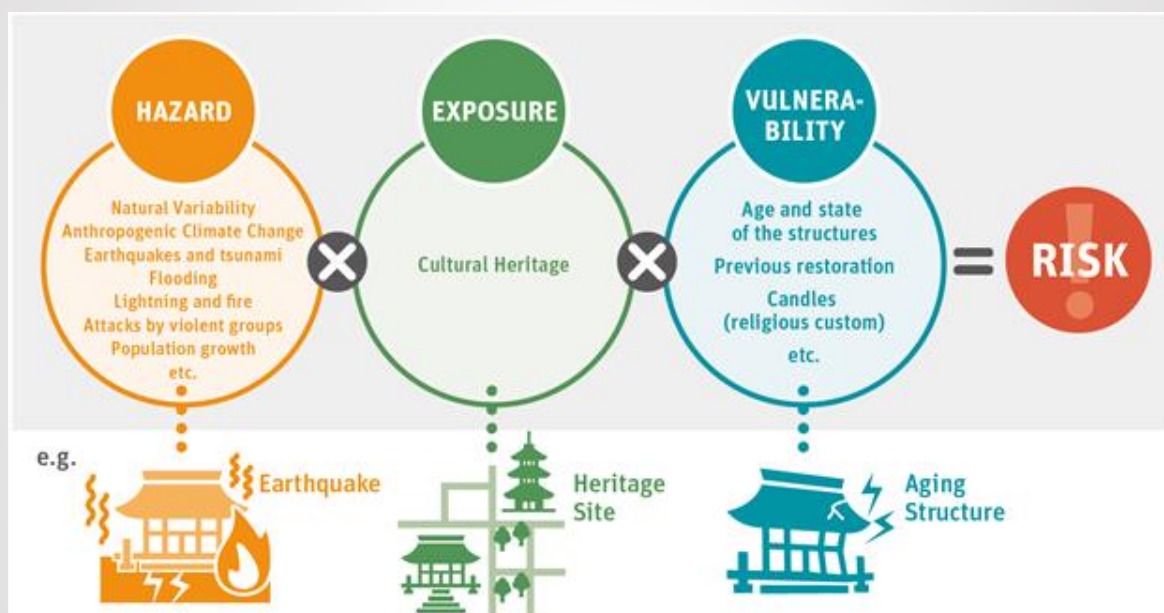


Fig. 3: Risk calculation for cultural heritage assets. Source: Newman & Minguez Garcia (2017).

A recent World Bank project focused on the rehabilitation and recovery of historic sites in several cities in Lebanon¹⁷, found that for every dollar invested in public infrastructure, seven dollars of private investment were attracted. Promoting the regeneration of downtowns and the conservation and

¹⁷ *The Lebanon Cultural Heritage and Urban Development Project (CHUD)*:
www.worldbank.org/en/news/feature/2016/12/22/cultural-heritage-project-strengthens-economic-community-activity-in-lebanon

adaptive reuse of their cultural heritage assets can improve livability and living conditions for poor communities. This also makes cities more competitive and enhances their capacity to attract private investment and create jobs. According to the U.N. World Tourism Organization, the tourism sector is responsible for one in 11 jobs globally, while one direct tourism job creates a further 1.5 indirect jobs. Altogether, the sector accounts for 10 percent of global GDP and international tourist arrivals are forecast to reach 1.8 Billion by 2030.

Investing in protection and recovery of cultural heritage from disasters has also an added value. **Cultural heritage is not only about monuments or traditions, but about the people who identify with the underlying culture.** The heritage of every city or country forms the identity of the people, crucial in post-disaster reconstructions to recover the character and integrity of the places. It plays a fundamental role also to develop risk mitigation and preparedness strategies, helping to engage and involve local communities.

3. International best practices

In order to reduce risk, since it is not possible to reduce natural hazards, the solution comes by reducing the vulnerability, increasing the resilience of the exposed assets. In the case of cultural heritage being the exposure, the equation becomes more complex due to the particular characteristics of heritage, and because many factors, such as age, state of conservation, etc., affect the level of vulnerability. Consequently, it is fundamental to connect the experts from both disciplines, ensuring that DRM authorities take into account the particular characteristics that heritage presents, and that managers of heritage sites are aware of the natural hazards, and risks they face, in order to be prepared to respond in case of emergency. Collaboration between relevant local/national agencies, authorities, specialists, and local community is essential to ensure the effective protection of heritage from disasters.

The main basic principle is, therefore, to foster the cooperation between DRM and Cultural Heritage agencies and institutions. It is essential to integrate the existing cultural heritage components into the city DRM plans, at the same time that each cultural heritage site must establish its own risk management measures. A summary of other key principles would include:

1. Consider all the components related to the site's culture. Cultural heritage is not limited to architectural structures, hence they are not the only ones at risk of being affected by disasters. In addition to tangible (monuments, museums) there is the intangible culture (traditions, celebrations).

2. Follow all the DRM processes, including:

1) **Prospective management:** identification of specific risks for cultural heritage including secondary hazards, such as the risk of fire after earthquake—crucial, for example, in old wooden churches with candles; and implementation of prevention measures through planification, territorial development, and building regulations, including heritage protection from physical hazards.

2) **Corrective management:** design and implementation of vulnerability reduction measures for exposed heritage assets, including structural reinforcement and establishment of financial mechanisms to develop them.

3) **Reactive management:** preparedness and response measures, including emergency plans, evacuation routes, and trainings on heritage protection during disaster situations, among others. Priority is always saving lives, and in a second moment, it is essential to have experts to properly act on cultural heritage and avoid irreplaceable losses. Finally, cultural heritage specialists and professionals should be in charge of assessing damages, and proposing and carrying out restoration treatments, including measures to strengthen resilience in order to avoid or at least mitigate the effects of future disasters.

4. The Japanese expertise.

Japan is a very hazard-prone country—threatened by earthquakes, tsunamis, typhoons, floods, and fire—and at the same time has an extensive and important cultural heritage, which includes temples, shrines, castles, and many other notable monuments, mainly built in wood. These conditions have motivated actors across Japanese society to develop an extensive experience in DRM for Cultural Heritage. In 2017, nine World Bank client countries travel to Japan to learn from its expertise, including Japanese systems for protection of cultural heritage (institutions and regulations), and DRM strategies and techniques applied to heritage sites, including prevention/mitigation, emergency preparedness, emergency response, and reconstruction/recovery (Newman y Minguez Garcia, 2017).

One of the best examples to illustrate DRM for cultural heritage is the Kiyomizu-dera area in Kyoto, UNESCO World Heritage Site. The temples have a traditional seismic-resistant architectural design, firefighting and lightning systems distributed throughout the area and camouflaged to avoid visual impact, monitoring and stabilization measures for landslides. In addition, there are innovative programs to involve and train the local community in disaster preparedness and heritage protection.



Fig. 4. Kiyomizu-dera Temple Disaster Prevention Measures (Newman y Minguez Garcia, 2017).

3. Include an evaluation of both response capacity and technical capacity within the city, to deal with cultural heritage and ensure that the necessary decisions and measures are taken to safeguard it. In this regard, it is also important to evaluate if the local community is prepared to provide assistance in case of emergency, through drills and workshops, since they can be the first ones accessing the sites, and therefore able to collaborate and help in the protection of their cultural heritage assets, both movable and immovable.

4. Integrate a cultural values assessment, and their relationship with communities, both local, national, and international, since many cases require the need of prioritizing actions. For example, some heritage sites with less architectural value may have greater religious value for the local community.

5. The case of Bhutan

Building on the Japanese expertise, Bhutan has been working with the World Bank to develop guidelines for integrating DRM in the conservation of their cultural heritage sites. Their vernacular architecture, *lhakhangs* (temples), and *dzongs* (fortresses), as well as *nangtens* (interior cultural heritage assets such as paintings, sculptures, and carvings), are integral to daily life and particularly vulnerable to fire. Bhutan is also earthquakes and windstorms prone country.

In April 2018, World Bank and Department of Culture at the Ministry of Home and Cultural Affairs (MoHCA) organized a workshop including participants from the Department of Disaster Management, Royal Bhutan Police, Royal Bhutan Army, DeSuung, Ministry of Agriculture and Forests, National Centre for Hydrology and Meteorology (NHCM), and District Administrations.

Among the key actions they (i) shared current and planned efforts to safeguard cultural heritage and to manage and reduce disaster risk, (ii) worked to improve operational coordination and cooperation; and (iii) developed principles and practices to draft the guidelines in accordance with the above, focusing on:

- Pre-disaster risk identification, reduction, monitoring, and preparedness; and
- Post-disaster response and recovery mechanisms for cultural heritage sites.



Fig. 5. Wangduephodrang Dzong, built in 1638 and burnt down during a fire in 2012 (Photo: BMG, 2018).

Changing mentality and connecting DRM to Cultural Heritage practices can make a difference in the process of creating resilient communities.

V. ROADMAP TO INTEGRATE DRM IN GUATEMALA'S CULTURAL HERITAGE

1. Context

In the framework of the technical assistance that the World Bank launched after the eruption of Volcan de Fuego on June 3rd, 2018, to support the Government of Guatemala in the impact assessment and the design of the recovery strategy, the Government requested to include cultural heritage as a sector to be taken into consideration and protected from of natural hazards.

Despite Guatemala has a very rich and varied cultural heritage, including around 2200 archaeological sites dating from pre-Hispanic times (from around 2000 BC to 1524 AD), in addition to the numerous monuments, buildings, and churches from the colonial era (1524-1821), republican (1821-1898) and contemporary (1898-1944), cultural heritage has not yet been integrated into disaster recovery plans, neither heritage sites have DRM plans.

Aiming to strengthen the protection and conservation of Guatemalan cultural heritage from hazards, the Executive Secretariat of the National Coordinator for Disaster Reduction (SE-CONRED) organized a joint workshop with the Ministry of Culture and Sports (MCD) and the support of the World Bank and GFDRR, inviting other relevant actors from the DRM and cultural heritage sectors in Guatemala.

Workshop on Disaster Risk Management for Cultural Heritage in Guatemala

The workshop was held on March 26th and 27th, 2019 at the Spanish Cooperation Training Center in La Antigua Guatemala. One of the main objectives was to establish a roadmap for short, medium, and long term actions to continue collaboration, commitment and accomplishment of the agreements, and implementation of the next steps.

The workshop was attended by representatives of the SE-CONRED, including the Directorate of Recovery and the Directorate of Integral Management for Disaster Risk Reduction (GIRRD), among others; of the MCD, including the Directorate of Cultural and Natural Heritage, the Department of Conservation and Restoration of Cultural Property (DECORBIC), and the Institute of Anthropology and History (IDAEH); of the Secretariat for Planning and Programming of the Presidency (SEGEPLAN); of the Municipality of Antigua Guatemala; of the State Building Construction Unit (UCEE) part of the Ministry of Communications, Infrastructure and Housing; and the UNESCO Office in Guatemala.

The participants also identified other institutions related to the management and conservation of cultural heritage and DRM, which intend to contact and get involved in the next initiatives of the working group established during the workshop. These institutions include the Ministry of Education (MINEDUC), the Ministry of Communications, Infrastructure, and Housing (CIV), the Guatemalan Institute of Tourism (INGUAT), the National Institute of Statistics (INE), the National Council for the Protection of Antigua Guatemala (CNPAG), and other Municipalities responsible for cultural heritage, as well as civil society organizations, such as neighborhood associations, fraternities, and religious organizations, among others, in order to extend collaboration between the national and the local levels.

During the workshop, the participants identified the main institutions related to DRM and cultural heritage conservation, as well as their respective responsibilities to strengthen heritage protection. Likewise, the participants from the different institutions worked together to identify the main actions to be carried out at short, medium, and long term, to integrate DRM and cultural heritage.

2. Roadmap

The objective of the established collaboration between the different institutions, reflected in this roadmap, is to ensure the protection of Guatemala's cultural heritage from natural hazards, such as earthquakes, hurricanes, floods, volcanic eruptions, etc., as well as from anthropic hazards, such as fires, vandalism, or erroneous evaluations, among others.

In order to establish a line of action to put into practice the results and agreements from the workshop, the participants identified a series of measures that can be broadly organized around six main areas:

1. **Inter-institutional collaboration:**

DRM for cultural heritage is a multidisciplinary process that does not correspond to a single institution, it must be developed through collaboration and cooperation between different institutions. Therefore, it is essential to provide technical advice and support between DRM and cultural heritage specialists. To do so, it would be recommended to sign an inter-institutional agreement. This should be proposed within the framework of the current legislation and the DRM National Plan 2018-2022, whose *Eje 5* integrates the MCD actions¹⁸.

Likewise, it is necessary to foster capacity building for both technical staff and also local communities, to ensure that there is awareness of the risk affecting cultural heritage as well as commitment to protect and conserve it.

Example of inter-institutional integration in Bhutan::

The Ministry of Home and Cultural Affairs (MoHCA), through its Department of Culture (DoC), in particular the Division for Conservation of Heritage Sites (DCHS), organized a multidisciplinary working group to develop principles and practices to integrate DRM in the conservation of Bhutan's cultural heritage. The group included participants from the Department of Disaster Management (DDM), also belonging to the MoHCA, the Fire Service Division from of the Royal Bhutan Police (RBP), Royal Bhutan Army (RBA) Disaster Response Department, Dzongkhag Disaster Management Committee (DDMC), and De-Suung, (Guardians of Peace), the Ministry of Agriculture and Forests, and several Local Administrations.

The interaction between ministerial teams and professionals in the field enriches discussion and benefits results, ensuring that the agreements respond to the needs of local communities at the same time that it is feasible to include them within official programs at the national or regional level.

Ref.: blogs.worldbank.org/endpovertyinsouthasia/japan-bhutan-improving-resilience-cultural-heritage-sites

2. **Generation of information to build databases:**

During the workshop, participants highlighted lack of information related to certain aspects necessary to carry out risk analysis for cultural heritage. For example, it would be necessary to prepare inventories of heritage assets, as well as compilations of historical documentation and previous studies, on one hand, and at the same time develop studies about the natural hazards, the exposure of those heritage assets, and their vulnerability. In sum, to develop databases combining both types of information, and keeping them regularly updated.

In order to help the decision of prioritizing interventions, it would be useful to develop a classification or categorization of the cultural heritage, as well as some guidelines or maintenance manuals for heritage management and conservation.

¹⁸ www.preventionweb.net/english/professional/policies/v.php?id=63655 (pp. 61-63)

Reference document:

As a reference document to be taken into account, the UNESCO resource manual *Managing disaster risks for world heritage* describes a series of guidelines for the development of DRM plans, including: risk identification and risk assessment; prevention and mitigation measures, emergency preparedness, recovery and rehabilitation after disaster. It also provides a guide to execute, re-evaluate, and reexamine DRM plans.

This document is available at: <https://unesdoc.unesco.org/ark:/48223/pf0000188562>

3. **Risk communication for cultural heritage:**

It is fundamental to establish clear communication channels to share the information related to cultural heritage at risk between practitioners but also with local populations. In this regard, some proposed measures would be: including risk and heritage issues in school education programs; including risk management measures in tourism plans, particularly, communication strategies and evacuation plans; and conducting campaigns in local communities located in risk areas, particularly those in isolate zones.

Example of activity for risk communication to local communities in cultural heritage areas:

The Disaster Imagination Game (DIG) methodology was developed in Japan to help local communities understand and communicate risk. It brings together different stakeholders from a historic area—citizens, experts, and governments—to assess the risks to their cultural heritage. This exercise aims to prepare people and places to respond to disasters by fostering collaboration and prompting discussion on potential risk mitigation measures. It is also a forum for developing strategies to keep communities involved in maintaining and protecting their cultural heritage.

1. Using a base map of the heritage area, participants identify key information, such as heritage buildings, water resources for firefighting, open/safe areas, and vulnerable areas for residents/tourists.
2. Participants imagine a disaster scenario, such as a severe earthquake, and identify possible collapsed buildings, blocked streets, and water/power outages, and mark them on the map.
3. Then, participants discuss emergency response measures, such as potential firefighting methods, and suggest possible routes for emergency teams, firefighting, and access to water.
4. Based on the above, participants imagine the evacuation options from buildings to safe spaces, for both people and movable heritage.
5. Finally, participants assess the potential damages on cultural heritage, both movable and immovable.

Key questions are: What is at risk (e.g., specific cultural sites, residents, tourists)? How and how often will hazards affect this area? What are the specific vulnerabilities (e.g., flammability, lack of awareness)? What could happen to the people/cultural sites—i.e., could people/items be rescued, and could sites be repaired or replaced?

More information at *Understanding Risk 2018*: understandrisk.org/publication/ur2018-proceedings/ (p. 18).

4. **Pre-disaster technical actions:**

Specific DRM measures can be divided between ex-ante and ex-post to the occurrence of a disaster. Among the ex-ante actions, to establish prevention, mitigation, and preparedness measures, the workshop participants proposed the establishment of specific risk identification programs for cultural heritage; for example, through the selection and prioritization of heritage sites or buildings to carry out preventive restorations. In this regard, a key action would be to update emergency response plans by including the advice of cultural heritage experts.

Another ex-ante key action would be the development of technical guidelines for the protection of heritage buildings before interventions, as well as trainings following that guidelines for institutional technical staff, but also for local population.

Example of DRM Plan for the archaeological site of Bagan, Myanmar:

In August 2016, the M6.8 earthquake that shook Myanmar damaged 350 monuments in the archaeological site of Bagan. The Government decided then to establish a DRM plan with support from the World Bank and GFDRR. The plan includes several sections and key information summarized as follow:

1. Context and history; cultural significance; the 2016 earthquake experience; the DRM approach in Bagan, and alignment with national and international frameworks.
2. Risk identification in Bagan:
 - Exposure and Vulnerability of (i) monuments, (ii) cultural and economic activity, and (iii) welfare of local people and communities;
 - Natural and anthropic hazards;
 - Preliminary risk assessment.
3. Management frameworks: Legal Framework and Institutional Framework.
4. Current measures to manage risks in Bagan.
5. Action plan for new and improved measures to manage risk in Bagan.

The document is available at: documents.worldbank.org/curated/en/671391544633861934/Bagan-Disaster-Risk-Management-Plan-DRMP

5. Post-disaster technical actions:

Among the ex-post actions, focused on emergency response and, especially, to enhance recovery after a disaster, the participants proposed the development of mechanisms for damages and losses assessment for cultural heritage, such as standard forms for rapid evaluation to collect key data and information from movable and immovable heritage assets. In order to do so, it is crucial to maintain communication channels between national and municipal agencies, and to develop and execute recovery plans in coordination with the institutions responsible for cultural heritage at both the national and local levels.

Another of the recommended ex-post actions would be the development of technical guidelines on recovery of heritage buildings, as well as trainings following that guidelines for institutional technical staff, but also for local population.

Reference documents:

The World Bank, GFDRR, UN, and the European Union, developed a methodology for *Post-Disaster Needs Assessment* (PDNA), including the sector of Culture:

documents.worldbank.org/curated/en/306991493101225270/Social-sector-culture

After the 2015 earthquake, the Government of Nepal with support from the World Bank carried out a PDNA including the cultural sector, which is available at (cultural heritage pp. 125-141):

documents.worldbank.org/curated/en/546211467998818313/Nepal-Earthquake-post-disaster-needs-assessment-sector-reports

UNESCO and the World Bank recently launched a new framework of action to integrate Culture in City Reconstruction and Recovery. The CURE framework is based on seven principles and includes suggestions to integrate tangible and intangible cultural heritage in different phases: damages and needs assessments, and scoping; policy and strategy; financing; and implementation.

documents.worldbank.org/curated/en/708271541534427317/Culture-in-City-Reconstruction-and-Recovery

6. Administration and logistics:

Finally, the participants identified a series of supporting measures also important to simplify and facilitate the administrative processes, as well as improve inter-institutional communication. These actions include reducing the procedures for providing intervention permissions, but ensuring they are endorsed by cultural heritage conservation professionals and establishing focal points in each relevant

institution to ensure constant inter-institutional communication and to coordinate the DRM for cultural heritage activities.

Reference document:

DRM for cultural heritage has been widely developed in Japan in recent decades, both technically and administratively. In April 2017, the World Bank and GFDRR organized a technical deep dive (TDD) in Tokyo and Kyoto, which brought together DRM and Cultural Heritage officials from nine developing countries. Participants learned about Japanese organization and methodologies and worked with Japanese and international experts to find solutions to the key concerns identified in their countries.

For instance, cultural properties in Japan are classified into six categories: tangible, intangible, folk cultural properties, monuments, landscapes, and groups of traditional buildings. Roles and responsibilities for national and subnational governments, cultural heritage owners, and residents in heritage areas are clearly defined.

This report is available at: documents.worldbank.org/curated/en/843101528951984265/Technical-deep-dive-on-resilient-cultural-heritage-and-tourism-summary-report

Despite the workshop participants identified a large number of potential actions to be organized in the short, medium, and long term, they proposed to initially focus on a small number of more specific actions to establish the roadmap that would lead progressively to the integration of DRM and cultural heritage. The leaders of this initiative are the heads of SECONRED and MCD, with support from the rest of the participating institutions.

The table in the next page summarizes the main lines of action and the respective specific actions that are expected to be carried out in the short, medium, and long term.

(Note: the table include a general reference to the MCD, although the two main subgroups responsible for the actions are IDAEH and DECORBIC).

Disaster Risk Management of Cultural Heritage. The case of Antigua Guatemala

<i>Objective:</i>	<i>Protection of Guatemala's cultural heritage from natural and anthropogenic hazards.</i>		
<i>Line of action</i>	<i>Short term actions</i>	<i>Medium term actions</i>	<i>Long term actions</i>
<p>1. Inter-institutional collaboration:</p> <p>DRM for cultural heritage is a multidisciplinary process that does not correspond to a single institution, it must be developed through collaboration and cooperation between different institutions. It is fundamental to provide technical advice and support between DRM and cultural heritage specialists.</p>	<ul style="list-style-type: none"> • Integrate a cultural heritage group within the National Recovery Framework (SE-CONRED) • Develop an analysis of the current legal framework on cultural heritage with special attention to DRM. (MCD) • Identify and include other institutions and key actors for DRM and cultural heritage: tourism sector, civil society, religious groups, and Universities. (SE-CONRED – MCD) 	<ul style="list-style-type: none"> • Integrate the Municipal Coordinators in the DRM for cultural heritage. (SE-CONRED – MCD – COMRED, Municipalities) 	<ul style="list-style-type: none"> • Support institutional strengthening and integration of new technologies for the study of Guatemalan cultural heritage. (SE-CONRED – MCD - Universities)
<p>2. Generation of information to build databases:</p> <p>Currently, there is a lack of information related to certain aspects necessary to carry out risk analysis for cultural heritage. It is necessary to: (i) prepare inventories of heritage assets, as well as compilations of historical documentation and previous studies; and (ii) develop studies about the natural hazards, the exposure of those heritage assets, and their vulnerability.</p>	<ul style="list-style-type: none"> • Create an inventory of heritage assets at the national level, identifying hazards, exposure, and vulnerability. (MCD – SECONRED) • Establish mechanisms to facilitate the exchange of DRM and heritage information (inventories, risk maps, etc.) in order to create joint and updated databases. (MCD – SECONRED) 		<ul style="list-style-type: none"> • Establish a database combining cultural heritage and DRM information, keeping it regularly updated. (MCD – SECONRED)
<p>3. Risk communication for cultural heritage:</p>	<ul style="list-style-type: none"> • Organize a specific training workshop on DRM for cultural 		<ul style="list-style-type: none"> • Establish solid mechanisms to systematize cooperation

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It is fundamental to establish clear communication channels to share the information related to cultural heritage at risk between practitioners and with local populations.	heritage in Guatemala. (SE-CONRED)		<p>with universities including curricula and master's degrees in DRM and heritage conservation;</p> <ul style="list-style-type: none"> and integrate academic programs and students within DRM for cultural heritage initiatives. <p>(SE-CONRED – MCD - Universities)</p>
<p>4. Pre-disaster technical actions:</p> <p>Prevention, mitigation, and preparedness measures, such as the establishment of specific risk identification programs for cultural heritage; for example, through the selection and prioritization of heritage sites or buildings to carry out preventive restorations.</p>	<ul style="list-style-type: none"> Develop a manual of basic guidelines for heritage protection techniques. (MCD with support from SE-CONRED) 		<ul style="list-style-type: none"> Prepare response plans, at first, and comprehensive DRM plans, in a second phase, for specific cultural heritage sites. (SE-CONRED – MCD)
<p>5. Post-disaster technical actions:</p> <p>Emergency response and post-disaster recovery, such as the development of mechanisms for damages and losses assessment for cultural heritage. In order to do so, it is crucial to maintain communication channels between national and municipal agencies, and to develop and execute recovery plans in coordination with the institutions</p>	<ul style="list-style-type: none"> Develop a manual of basic techniques for recovery processes and interventions in cultural heritage. (MCD with support from SE-CONRED) Support tools, such as a quick assessment forms for movable and immovable assets, with a focus on DRM. (MCD with support from SE-CONRED) 		

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responsible for cultural heritage at both the national and local levels.			
<p>6. Administration and logistics:</p> <p>Also important to establish supporting measures to simplify and facilitate the administrative processes, as well as improve inter-institutional communication.</p>	<ul style="list-style-type: none"> Appoint focal points in each institution and ensure communication between them. (SE-CONRED – MCD) 	<ul style="list-style-type: none"> Establish effective and efficient coordination between MCD and Municipalities to create agile mechanisms to act on heritage assets and reduce the costs of construction licenses. (MCD - Municipalities) 	<ul style="list-style-type: none"> Search for financing mechanisms for the processes of restoration, conservation, and intervention on cultural heritage. (SE-CONRED – MCD)

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www.gfdr.org/sites/default/files/publication/drmhubtokyoResilientCHTSummary.pdf

From Japan to Bhutan: Improving the resilience of cultural heritage sites:
blogs.worldbank.org/endpovertyinsouthasia/japan-bhutan-improving-resilience-cultural-heritage-sites

Links of interest:

SE-CONRED: conred.gob.gt

Ministerio de Cultura y Deporte: mcd.gob.gt

CNPAG: www.cnpag.com

Centro de Formación de la Cooperación Española en La Antigua Guatemala: www.aecid-cf.org.gt

INGUAT: www.inguat.gob.gt

UNESCO Guatemala: unesco Guatemala.org

Banco Mundial Guatemala: www.bancomundial.org/es/country/guatemala

World Bank Guatemala: www.worldbank.org/en/country/guatemala

GFDRR Guatemala: www.gfdr.org/en/guatemala