



United Nations
Educational, Scientific and
Cultural Organization



World Heritage Convention

CCBP

Caribbean Capacity Building Programme

For World Heritage



Risk Preparedness.

MODULE

3

Module



3

Risk Preparedness

Drafted by: Herbert S. Stovel

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Cultural heritage management programme for the caribbea

The Caribbean Capacity Building Programme (CCBP) is a long-term training programme focusing on cultural heritage management and aiming to create a Caribbean **network** of heritage experts. They, in turn, can share knowledge, know-how and expertise on the *modus operandi* of the World Heritage Convention and on heritage management in general.

The CCBP was conceived to respond to the needs identified in the Latin America and the Caribbean Periodic Report (<http://whc.unesco.org/en/series/18>), which showed that most of the Caribbean States Parties still lack the capacity and expertise needed to enable full protection and management of the present World Heritage sites and to identify new World Heritage sites.

The CCBP was endorsed by the World Heritage Committee in 2004 as part of the Caribbean Action Plan for World Heritage.

The CCBP is composed of a core and mandatory training module on the *Application of the World Heritage Convention* and a **series of other modules focusing on the various aspects of management** (tourism, historic centres, risks and cultural landscapes). Each module lasts 30 hours and encompasses practical exercises, analysis of regional case studies and discussions.

UNESCO is pleased to present this first edition of the **Module 3: Risk Preparedness**, which have been developed with the contribution of Consultant Herbert S. Stovel.

The Caribbean is exposed to frequent natural disasters, such as earthquakes, hurricanes, heavy rain, floods, tropical storms, volcano eruptions and others that cause heavy economic and human losses. Participants will become familiar with risks of different natures threatening heritage sites (e.g. armed conflict, lack of maintenance, industrial contamination). Methodology to assess damage will also be provided. This module will prepare heritage professionals to face and cope with the different phases of risk management, these being: preparedness, response and recovery.

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Introduction

This interactive session introduces participants to the objectives, structure and content of the module in relation to their expectations. It also introduces participants to the resources available.

Subjects	Participants' objectives
1. Module objectives	Participants discover the links between their expectations and needs, and the module's objectives
2. Module content, structure, and methodology	Participants become aware of module structure, content and methodology planned to reach the module's objectives
3. Module references	Participants become aware of human, written and web based resources proposed for the module, and how best to use and gain access to these

Guide to organisation of the introductory session

1. Module objectives

After a formal course opening, participants should be asked to introduce themselves. They should convey their professional background, their working situation at present and what they hope to learn during the course.

The course instructor should record the objectives expressed by participants and then relate these to the module objectives.

Basic learning objectives for the course are the following:

- Participants will gain familiarity with the basic concepts in the risk preparedness field and be able to relate these to the basic concepts in the heritage conservation field
- Participants will become aware of the basic building blocks available in putting together effective risk preparedness strategies for cultural heritage, and the advantages and disadvantages of each, in a variety of cultural heritage contexts and in relation to a diverse set of hazards
- Participants will learn to apply their understanding of the basic elements of effective risk preparedness strategies for cultural heritage, in real life contexts
- Participants will return home enabled to apply a "change agenda" built in the course and meant to be applied in real life working situations

Other course objectives may include:

- Testing course materials and objectives for later use in other contexts
- Building a permanent network of those in a region interested in pursuing the subject of the course

2. Module content, structure and methodology

The instructor should present both the planned content and structure of the module in general terms by blocking it out on a blackboard or a flip chart and then relating it to the detailed module programme handed out at the beginning of the module.

The instructor should discuss with participants the planned approach to the module and discuss the different pedagogical methods being used: lectures, discussion, review inside individual sessions, exercise(s) or equivalent, field visits, post-module follow up. It should be clarified that in general most sessions will be used to pass knowledge to participants and to promote awareness, and that exercise(s) will be used to assist participants to apply what they have learned in the lecture type sessions. The instructor should stress the importance of an interactive approach, and the importance of participant contributions.

3. Module references

The instructor should review the resources available for the module. These should include the following:

- **Human resources.** Other instructors (if being used) should be introduced and their backgrounds described. While normally one instructor would run a module like this, it is always advantageous to involve local experts as resource persons, especially to support exercise(s). The chief instructor should also introduce himself/ herself, supplying some detail about relevant professional background. The instructor should also suggest that the participants by virtue of their training and experiences are also to be considered as human resources for the course.
- **Reference documents.** A reference package should be put together in either paper (hard copy) form or digital form for each participant. This should be designed to serve as a reference document during the module but also be substantial enough to assist the participants when they return home. It should include materials presented as handouts for any of the sessions and at least chapters or articles from the key references in the field. It should also include a well developed reference bibliography of written and web based sources.

Programa temático

Day 1	Day 2	Day 3	Day 4	Day 5
Course opening.	5.Improving risk preparedness: Elements of a sound approach to improving risk management for cultural heritage I	7.Risk preparedness strategies for earthquakes and other land movement based threats	10.Risk preparedness strategies for dealing with climate change I	12.Improving risk preparedness: strengthening and implementing preparedness plans
1.Introduction to the module				
2.Challenges in managing risks for cultural heritage I	5.Improving risk preparedness: Elements of a sound approach to improving risk management for cultural heritage II	8.Risk preparedness strategies for hurricanes, floods and other water based threats	10.Risk preparedness strategies for dealing with climate change II	4.Exercise – final work sessions
Break	Break	Break	Break	Break
2.Challenges in managing risks for cultural heritage II	6.Risk preparedness strategies for various types of cultural heritage (collections, buildings, historic towns and landscapes)	9.Risk preparedness strategies for fire	11.Risk preparedness strategies for armed conflict	4.Exercise – final work sessions
Lunch Break	Lunch Break	Lunch Break	Lunch Break	Lunch Break
3.Improving risk preparedness: tools of analysis	4.Exercise – site visit	4.Exercise – work session	4.Exercise – work session	4.Exercise – presentations and discussion I
Break	Break	Break	Break	Break
4.Introduction to exercise	4.Exercise – site visit	4.Exercise - work session	4.Exercise – work session	4.Exercise – presentations and discussion II Conclusions and closing

Session 2. Challenges in Managing Risks for Cultural Heritage, I and II

Principal theme: Understanding the state of the art in efforts to advance risk preparedness for cultural heritage, and how best to develop and orient strategies for improvement in a variety of contexts.

Subjects	Learning Objectives
2.1.Situation of cultural heritage today: why the growing concern for risk?	<ul style="list-style-type: none"> •Participants become aware of reasons for growing concern for the risks to cultural heritage •Participants become aware of some case studies and examples which suggest that cultural heritage is increasingly at risk, and that growing concern for cultural heritage at risk is legitimate •Participants become aware of varying language used to describe this field
2.2.Diversity and nature of cultural heritage, and the methods for its care	<ul style="list-style-type: none"> •Participants become aware of the nature of cultural heritage as understood today •Participants become aware of the evolution in appreciation and recognition of cultural heritage over time •Participants become aware of the diversity and complexity of cultural heritage and the difficulty of protecting that diversity and complexity in current circumstances •Participants become aware of the changes in thinking and approach to the care and conservation of cultural heritage over the last 150 years
2.3.Evolution of approaches to managing risk in civil society	<ul style="list-style-type: none"> •Participants become aware of key components of frameworks for risk preparedness in civil society
2.4.Current challenges and opportunities in improving risk preparedness for cultural heritage	<ul style="list-style-type: none"> •Participants become aware of the many and diverse attitudinal, institutional and technical obstacles in the way of improving risk preparedness for cultural heritage •Participants become aware of the significant opportunities and recent advances in understanding that help facilitate risk preparedness for cultural heritage
2.5.The need for an integrated approach	<ul style="list-style-type: none"> •Participants become aware of unintegrated nature of early efforts to improve risk preparedness in relation to existing cultural resource and management systems •Participants become aware of the importance of an integrated approach in improving risk preparedness for cultural heritage

OUTLINE OF MATERIAL TO BE COVERED

2.1. Situation of cultural heritage today: why the growing concern for risk?

Perceptions that increasing numbers of natural disasters are affecting human communities, life, property and also cultural heritage ever more strongly appear regularly in the media coverage of every natural disaster;

- Increasingly, after every new disaster, a standard statement appears in newspapers which includes words to the effect that “this disaster reflects increased severity/ frequency of this type of event”
- True or not, provable or not, this type of dramatic contention, attracts significant media attention and is often repeated

In this context, impressions of increasing danger to, and loss of cultural heritage have also been more visible, more immediate.

From the early 90s, when television reporting began to bring instant news from disaster sites – we could see hurricanes in Charleston, collapsing highway overpasses in San Francisco, bombs over Baghdad in real time – the losses to property, human life and cultural heritage came right into our living rooms

Some organisations have picked up this problem and focussed significant public attention on it. In 1996, the International Committee of the Blue Shield (ICBS) was created by four NGOs (ICOMOS, ICOM, IFLA, ICA) working with UNESCO to improve risk preparedness in relation to the Hague Convention, and beyond. In some ways this effort was envisioned as parallel to the creation of the International Committee of the Red Cross set up to support the Geneva Convention. Though the ICBS has not become the strong focus of international risk preparedness activity that some envisioned, it has provided a useful platform for professional and institutional exchange in the field.

Some have sought to improve monitoring of “heritage at risk”, for example, ICOMOS, which on an annual basis publishes an international compilation (of the same name) featuring reviews of threatened sites from its national committees. The World Monuments Watch (run by the World Monuments Fund based in New York City) since the early 90s has solicited nominations of threatened heritage to develop their list of the World’s Hundred most threatened sites. Various countries do this at the national level, including the USA for example, where the National Trust for Historic Preservation maintains a list of the ten most threatened sites in the country.

As well as reporting on threatened sites, many agencies and public authorities have also taken up visible new initiatives to improve risk preparedness, such as the Italians with their invention of “risk mapping”

The question of capacity to manage risk is now a question posed of every potential World Heritage inscription in demonstrating management effectiveness.

Concern for organising risk management for cultural heritage training in the Caribbean dates from the 1998 request of the World Heritage Committee to ICCROM to follow up on the negative consequences of hurricane Georges which struck the Dominican Republic in October of the same year. ICCROM has organised trans-Caribbean week long training courses in the Dominican Republic on two occasions since then, and other pertinent UNESCO initiatives have also been launched.

Based on discussions in the 28th session of the WH Committee focused on improving use of provisions for emergency assistance and the visibility of disasters negatively affecting sites of World Heritage importance (Bam in Iran, to be come a WH site after its 1999 earthquake, and Galle in Sri Lanka, badly damaged by the tsunami of 2005, and others), the World Heritage Committee has adopted a Strategy for Risk Reduction for World Heritage Properties at its 31st session in New Zealand.

With the perceptions of risk to cultural heritage being strongly increased by the increased attention given to visible demonstration of associated loss, and also with growing attention being given to finding technical and strategic solutions to protect cultural heritage from threats, the concern for risk occupies an increasingly central position to day in cultural heritage debates and conferences.

A note about language used to describe the field. In this module, we refer to efforts to provide better care for cultural heritage as “risk preparedness”. Participants should be aware however that they will find other similar terms used to describe the field in various reports and publications. Some publications, particularly those concerned with natural disasters will refer to “disaster preparedness”. Some publications, focused on the need for an holistic approach, will refer to “risk management”. UNESCO’s World Heritage Centre has organized several report and meetings in the last two years focused on “risk reduction” – that is, focused not on the philosophy (of better preparedness), or the approach (of better management), but on the

expected results. UNESCO has done this to align some of its language more closely with international civil defense trends in language use. In this module, you may expect to find – and to be able to use – all of these phrases, almost all of the time

2.2 Diversity and nature of cultural heritage, and methods for its care

The phrase “cultural heritage” is relatively new, its popularity dating essentially from the World Heritage Convention of 1972. Government services for conservation set up in the late 19th century or early 20th century referred to “departments of archaeological services” or “antiquities departments”; in some countries (India, Nepal for example), this language has persisted to the present day. In the era after the Second World War, an era devoted to reconstruction of structures and a way of life destroyed by war, in general, reference was made to “monuments and sites” (speaking of built heritage), or museum collections and objects. From the mid 70s on, when concern for built heritage was institutionalized in almost all countries around the world, heritage grew outward and expanded – from the monumental and special (the oldest, the largest, the most beautiful) to the representative and socially relevant, from the isolated structure to the architectural complex, from the complex to the neighbourhood or district, from the district to the historic town, from the historic town to the landscape or territory.

The process of selecting objects for museum settings went through a similar development, moving from the objects reflecting the lives of the elite to objects broadly representative of all levels and forms of social development.

Concern has also moved from the tangible to the intangible, particularly in the past 5 years with the arrival of the new UNESCO Convention on intangible cultural heritage.

Equally, approaches to conservation have altered with time; 19th c. preoccupation with the limited choice between “restoration” and “preservation” has been replaced over the last 30 years by preoccupation with balancing economic gain and respect for heritage values in the context of “rehabilitation”; and today, we explore the relationship between sustainability and conservation. As well, modes of conservation have altered; once achieved by attempting to manage “intervention” to important heritage places or objects, custodial care has moved to increase concern for the management system and the conditions necessary for long term conservation (and here a link can be made with concern for risk preparedness). Here it is worth stressing the adoption of “preventive” approaches

already in the 80s in museums as a way of focussing scarce resources on conservation priorities, doing “more with less” to meet environmental standards, and moving to a risk sensitive framework.

The expansion of what constitutes the heritage has had implications for the skills necessary to look after this heritage. Now the care of heritage requires interdisciplinary understanding, technical skills able to deal with traditional materials as well as modern ones and also the ability to integrate the tangible and intangible heritage dimensions.

2.3. Evolution of approaches to managing risk in civil society

A century ago, disasters in many parts of the world were seen as “acts of God” and unavoidable, and the idea that one could prepare for them understood as foolish; even today that attitude can be found, as at Mount Athos after a 2005 fire in one of the 20 the monasteries in the World Heritage property (Chilandri), where the monks found questions about how to better prepare in future quite irrelevant.

In today’s largely secular world, governments have become much more interested to take responsibility for reducing the consequences of disasters.

Disasters are generally local – destroying or affecting communities or parts of communities – but the resources and specialized abilities necessary to respond to disasters rarely exist independently at the local level. Hence in general, national governments over time have tried to put in place national level risk preparedness institutions (such as FEMA (Federal Emergency Measures Agency) in the USA) to provide a national policy framework for preparedness and response useful at the local level, and to support self-help efforts at the local level to improve preparedness.

Key local agencies have also taken greater responsibility to help protect cultural heritage at the local level before and during moments of emergency: key local museums have risk preparedness plans for buildings and collections which can be adapted for application in other local institutions.

2.4. Current challenges and opportunities in improving risk management for cultural heritage

It is generally assumed that cultural heritage has a lower priority in emergency planning and response than human lives and property do, and cultural heritage professionals are often reluctant to push too hard in emergencies, for fear of offending those charged with the responsibility to protect life and property.

However, civil defense officials are often happy to work with cultural heritage – if the properties that give it importance can be defined in advance, and if priorities for “saving” can be established. It is important to note that securing cultural heritage amidst concern for life and property requires commitment to advance planning.

In many areas of concern, this attitude continues to prevail. Recovery operations after disasters in Gujarat, India (earthquake) and Sri Lanka (tsunami) have regrettably given emphasis to resettling people in settlements not suited to maintaining existing social networks and traditional ways of life, and family and clan structures. The same lesson – complaining while the recovery effort is under way - is too late: commitment to considering heritage must be in policy before the disaster strikes.

Among many advances in the last decade or more has been the work of conservation professionals researching and demonstrating the degree to which traditional construction systems are able to resist earthquakes, contrary to popular belief. (In the aftermath of the Bam, Iran earthquake which killed many thousand people, many newspaper articles called for the destruction of the traditional mud brick architecture. In reality, a dozen people died within the earthen citadel following collapse of “restored” traditional domes – but 99.9 % of all casualties occurred in the collapse of steel and reinforced concrete buildings.). It is important that lessons of this kind are widely shared.

2.5. The need for an integrated approach

Formerly, even when recognized as important, risk preparedness was treated as an add-on in management planning for cultural heritage. If there was a heritage management plan in place, usually authorities would mandate creation of a separate and distinct risk management plan. Integrated approaches offer many advantages; but it is important to recognize that there are two levels of integration. The first level of integrating concern for risk preparedness is within overall cultural resource management practices. The second is integrating concern for risk management for cultural heritage, within overall risk preparedness plans for communities. Integration ensures that cultural heritage advocates are not in conflict with civil defense officials during emergencies and after. It also ensures that cultural heritage priorities are recognized in risk response and recovery plans and budgets.

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- *“Underwater cultural heritage at risk: managing natural and human impacts. Heritage at Risk - Special Edition”*. Editado por Robert Grenier, David Nutley y Ian Cochran. Abril 2006
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<http://www.worldmonumentswatch.org/>

En el sitio web de Vigía Mundial de Monumentos (perteneciente al Fondo de Monumentos del Mundo) se pueden encontrar los esfuerzos realizados desde 1996 hasta 2006 para identificar cada dos años los 100 patrimonios más amenazados del planeta.

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Session 3. Improving risk preparedness: tools of analysis

Principal theme: This session concerns the analytical steps necessary to better understand the sources of risk, and how to apply this understanding.

Subjects	Learning Objectives
3.1. Understanding risk and how to measure it	Participants learn to apply methods for measuring risk and its component parts (vulnerability, hazard) in a variety of contexts and circumstances
3.2. Use of risk analysis	Participants become aware of how best to use the results of risk analysis in improving risk preparedness

OUTLINE OF SUBJECTS TO BE COVERED:

3.1. Understanding risk and how to measure it

Defining risk, and the variables associated with it: risk is the product of vulnerability (the degree of susceptibility to negative impacts deriving from particular threats (e.g., earthquake, fire, flood, hurricane, human action etc.) and hazard (the likelihood of occurrence of particular threats). Risk = vulnerability x hazard

Steps in defining risk:

- Define the possible hazards that may have an impact on the cultural heritage it is desired to protect.
- Be sure to identify hazards that are specific to the place.
- Hazards may be of many sources, natural and human, and it is useful to attempt to identify a wide array of potential threats.

In general, assessing risk involves assessing the full set of conditions in which the heritage sits. This means assessing the environmental, social, economic, even political factors which can affect the heritage.

Traditionally, those involved with risk management have focussed on physical threats found in nature: earthquakes, tsunami, floods, hurricanes and typhoons, land-slides etc.

But it is also important to include analysis of physical threats which can be created by human activity (or inactivity). Bridges collapse as a result of inadequate maintenance; cultural heritage of symbolic value is often targeted for destruction in armed conflict; fires are set deliberately; the failure of aging and poorly maintained urban infrastructure (sewers, water,

electrical systems) can have immediate impacts, but also precipitate indirect failures of related surface features or parallel systems.

It is important also to try to assess economic and social trends which could have an impact on the care provided to cultural heritage – changing demographic trends which for example will accelerate market driven development, or reduce demand or use of heritage structures.

Steps in measuring hazard:

1. Measuring hazard involves looking at past behaviour of the source (threat) responsible for the hazard, and predicting the probability of occurrence. Predictability based on past behaviour is not always absolute. The 500 year flood which inundated the Mississippi River in 1993 (flood waters were 50 feet above the “norm”) was described by experts as the 500 year flood – likely to happen once in 500 years – but a flood of the same severity occurred three years later in 1996! Human activities – protecting some communities from floods with the building of dykes and dams – had increased the impact for other communities in this case, and the possible greater impact for these unprotected communities had not been fully appreciated by those in charge.

2. For each threat identified as having the potential to affect the cultural heritage being looked at, it is important to identify the likelihood of the occurrence of the threat – this should be identified in terms of graded steps: “high”, “medium”, “low” is usually enough distinction to make.

3. Nature of the impact of the threat should be assessed; some threats such as earthquakes are cataclysmic occurring with little or no warning; others are gradual, occurring slowly over time, allowing some time to prepare. Floods can be cataclysmic, occurring as “flash floods” or slowly over weeks and even months before cresting.

4. Qualitative assessment of potential to mitigate or control hazard

- Identify known and potential sources of the hazard.
- Prepare an inventory of potential means of controlling, managing or mitigating the impact of the identified or potential sources of the hazard, with an assessment of the degree of difficulty associated with each possible remedial means to be applied

Steps in defining vulnerability:

1. Identify the components of the cultural heritage in question; for an historic town, it would be useful to separate out the individual buildings and structures; for an object, it would be useful to separate out the different physical elements composing the object.

2. For each component, assess vulnerability for each identified threat. This involves identifying the material, and behavioural characteristics of the component, so that the possible impacts of the threat on those characteristics can be assessed. This analysis is most usefully organised in a matrix which shows vulnerability for individual components of cultural heritage against all significant threats. Vulnerability should be assessed in incremental steps: ranking vulnerability at levels “high”, “medium”, and “low” is generally enough. While vulnerability is being calculated, it is also useful for each element under analysis, to note possible means to decrease vulnerability (though reinforcing structure or protecting surfaces, etc.) where possible

Steps in calculating risk

1. Determine the cause of hazard and vulnerability for each threat (cause or product of hazard.)

2. Classify the results: the result of this analysis will be a hierarchy of cultural heritage places or objects which are at high risk, which are at moderate risk and which are at low risk, and all the stages inbetween.

3.2. Use of risk analysis

Having established the risk present in given circumstances for designated cultural heritage, it is important to consider how best to organise this information and how best to use it to aid decision-making.

The information can be assembled in different forms: a list of those objects or places of cultural heritage value with high hazard value and high vulnerability can be prepared and primed for remedial action.

This information can also be mapped. Italian investigators have popularized a system of risk mapping which brings together information gathered on hazard, vulnerability and resulting risk.

This can be done at many scales – from that of the territory to that of the town, to that of the neighbourhood. Other variables can be brought together with this analysis. For example, the heritage value of individual components can also be mapped and using mapping overlays – either physically, or with the use of GIS technology – offer information which can usefully be combined with hazard and vulnerability.

The information can be used in different ways:

- To help managers of the cultural heritage assess their priorities for action, in order to reduce risk
- To help planners determine, and design to levels of “acceptable risk” for cultural heritage in particular circumstances.
- To attempt to measure impact associated with risk, once risk is “known” or calculated. The techniques and methods useful in doing this are well known and have been developed over the last thirty years in carrying out “environmental impact assessment”.

All of the above techniques are meant to be used as a part of risk-preparedness plans organised well in advance. It is also important however to be able to carry out an analysis of risk during disasters as they happen, in order to guide decisions to:

- better save lives still at risk
- reduce losses to property and to heritage
- direct attention to sources of hazard which can most effectively be eliminated or mitigated.

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Session 4. Module exercise

Principal theme: This exercise is meant to allow participants to apply the materials learned in the course.

Subjects	Learning Objectives
4.1. Setting up the exercise	Participants learn why they are going to do the assigned exercise, and familiarize themselves with the expectations of the organisers, the time schedule for working on the exercise, and other logistical concerns including team composition and leadership. Participants should receive their background information packages during their introductory session, so that they have a chance to anticipate questions.
4.2. Development of the exercise, including site visit	Participants gain relevant background on the exercise, by means of a site visit and are guided through subsequent work sessions to address exercise objectives.
4.3. Conclusion of the exercise and presentations	Participants gain experience in presenting professional conclusions to professional/ public audiences, and receive substantial feedback on their work

GUIDE TO THE EXERCISE

4.1. Setting up the exercise.

- The exercise needs to be site specific and take advantage of the opportunities and problems conferred by a single site, and hence must be designed in the context of the location of the planned course, the capacities of the participants, and the ability to provide full access to challenging sites, relevant background material and associated resource persons.
 - The exercise does not need to be the same for everyone – in fact a set of related themes can offer a larger group learning experience.
 - Usually such exercises benefit from a team approach, where 4 or 5 participants work together on a common problem. This can help participants learn from each other, and go into their subject fairly deeply. With a small number of teams in place, presentations can also be fairly detailed and feedback offered fairly substantial.
 - Teams should mix those with cultural heritage backgrounds with those with civil defence backgrounds. to simulate the real life need to respect and integrate the two sets of professional views.
- Possible subjects for such exercises include (based on my own experiences in Santo Domingo’s Zona Colonial”, and elsewhere):
 - Preparation of a “risk map” for a section of an historic city – perhaps only a block, perhaps a neighbourhood. This requires participants to investigate vulnerability of structures or features in the subject area in relation to various threats, to investigate the hazard associated with various threats (earthquake, hurricane, fire etc.) and the likely forms of impact. Preparing the map could also require participants to define heritage values of buildings in the subject area in a very general way (high, medium, low). Participants should synthesize their mapped findings in order to develop an action plan to reduce risk in the study area.
 - Preparing an emergency response plan for an institution, for example, a small museum. The exercise should focus on both objects and the structure. This requires the close co-operation of museum staff.
 - Preparing an integrated response plan for a community. This requires a large team, good co-ordination, full co-operation of city officials in providing access to information and people, and adequate time to carry out something

meaningful. (During an exercise like this carried out in Santo Domingo, the large team of 9 people included 3 or 4 members of the local civil defense team - hence we had access to pertinent information, and a supportive client – and produced a product (even if in a preliminary state) that the community wanted).

–Teams should be formed during the first introductory session and team leaders identified. It should be made clear that the exercise is a significant part of the training course and that participants are expected to take it seriously and to work on it energetically. Participants respond best to work assignments which offer “real life” challenges. If possible, the results of the exercise should be treated as professional work which can be turned over the host institution or agency.

4.2. Development of the exercise, including site visit

- Successful exercises require sufficient time for participants to be fully briefed re expectations, to carry out research, to visit the site several times, and to work together.
- It should not be assumed that participants will find time to actively work on the exercise at night.
- If night time work on the exercise is expected or necessary, it should appear in the course schedule and the session should be supported by the participation of the instructor and any available resource persons.
- The site visit should be well organised to present useful background information for the purposes of the exercise: introduction to issues, summary of local experiences with risk preparedness in the past, constraints on developing a strategy, available resources. A local resource person should be identified who can assist during the course of the week and who is free to receive groups for second visits or subsequent interviews.
- An exercise package should be prepared well in advance with all basic reference data that might be useful for the exercise: drawings and photographs of the site, and its important features, copies of relevant regulations, procedures, commitments, protection plans etc., data including photographs re previous disasters and their consequences. This information can not usually be obtained quickly and to ensure that the exercise is realistic, its acquisition should be planned well in advance. Sufficient copies of all this information should be prepared to provide one copy for each participant.

4.3. Conclusion of the exercise and presentations

- Exercises benefit from enough time being allowed for presentation, feedback and discussion of each team’s work, as well as overall discussion of all presentations.
- Guidelines should be prepared in advance for presentations – what technology, how long, how organised – and these guidelines, especially time guidelines should be rigorously adhered to.
- If possible it is also useful to invite those with responsibilities touching the subjects of the exercises to the presentation so that participants can get “real” feedback.
- Feedback is the most important part of such an exercise and whatever constraints might limit the presentations, feedback, led by the instructor, should retain a central role.

Annex: Alternative to the above exercise: simulated case study

- In some communities, it may be difficult to have easy access to real institutions, real problems, and real professionals for exercise support, and it may be useful to contemplate alternatives to site-based exercises
- One way to do this is to invent a simulated disaster scenario and to “game” interactions between those playing important roles in a real life scenario
- Here’s how this would work:
 - Prepare a script for a chosen scenario, and write up the story line and the role descriptions for key players.
 - For example: chosen scenario could be a large fire in the centre of a World Heritage city, involving a complete city block. The fire begins in one building with a night club, and soon spreads to all adjacent buildings. By morning, 13 buildings are at least partly destroyed and one has collapsed. No lives are lost.
 - The Fire Marshall erects a barrier around the block, and forbids entry to this zone. Heritage professionals who want to enter to investigate the state of the buildings and how to stabilize, are denied access.
 - The heritage group go to the media and accuse the Fire Marshall of indifference to heritage. The Fire Marshall says that the heritage people are indifferent to the risk to human life. The Mayor instructs the planning staff to ignore the heritage people.

- The heritage people go to the World Heritage Centre and the Mayor is getting phone calls from the UK government asking why World Heritage is not being protected.
- The heritage group then go to the media with their approach – a well tested rolling platform which can be moved up to external walls and stabilize them by attaching itself through burned out window openings, without risk to people. The Fire Marshall describes the heritage people as a “bunch of idiots”.
- The lead spokesperson of the heritage group is hired by the City to develop a design approach to re-building the block, and suddenly stops saying anything. Without their leader, the heritage group lose their sense of strategy. They ask to be included in all meetings on the future of this block. Their request is refused.
- The property owner announces that he wants the site cleared and a new development paid for by the city and the World Heritage Centre.
- The city is visited by a delegation for the World Heritage Centre who are quoted as saying “the city is not doing enough to meet the obligations of the State Party under the 1972 WH Convention”.
- The arguing goes on for two weeks. At the end of two weeks, eleven of the other 12 buildings on site still standing, collapse.
- The next day, the Fire Marshall sends in the bulldozers and removes all material including very significant 13th and 14th century formerly buried archaeological material lying under the fire damaged buildings.
- Heritage experts protest again, and the Mayor is heard saying: “those idiots again?”
- One month later, heritage expert Herb Stovel gives a lecture in the city in which he says that the risk preparedness system as a whole failed the city, and explains why he says that. The Mayor and the Fire Marshall refuse to come to the lecture, and are quoted as saying: “its a shame, given how many local heritage idiots we have, that we have to import more from Canada!”
- The simulation would be played out by participants along the lines above but their interactions would be directed by character profiles written up and provided to participants. These could be developed for the Mayor, chief city planner, media interviewer, heritage expert and group leader, heritage expert number 1, heritage expert 2, property owners 1, 2 and 3, chief city planner, city heritage planner, etc. Participants can share responsibility for animating various roles, 2 or 3 to a role if necessary.
- A character profile for the Mayor would say:
 - Resents World Heritage status because he does not want his city to be governed by UNESCO bureaucrats in Paris
 - Does not believe in consensus decision-making and believes he is the only one with the competence and authority to decide any issue; constantly tells the press that city government needs a “strong hand at the helm, not hand holding”
 - Is being sued for libel by half a dozen local council members and parliamentarians, and citizens
- The game is led by an animator who follows a script and invites role players to take planned initiatives and who, every so often announces “news” which players can react to. Normally after a while, the role players take over and run the game themselves.
- The first session would introduce the simulation, explain how it would work, introduce roles and explain the operational rules of the game. The game would be played over two or three subsequent sessions.
- A final session would discuss the situation which lay behind the simulation, and discussion would be directed by the instructor to useful analysis. The key question for participants to discuss could be Stovel’s question: how did the risk preparedness system fail the city?
- It would be important at the end of discussion of key messages and key learnings coming from this simulation to give participants feedback about what happened in “real life”, and where real life may have been different from the game. (By the way, though readers may think this is exaggerated, this is a true story!).

Session 5. Improving risk preparedness: elements of a sound approach to improving risk management for cultural heritage I and II

Principal theme: This session is meant to provide an overview of the planning tools available to concerned officials and professionals to make decisions to improve the quality of risk preparedness being brought to cultural heritage in various contexts.

Subjects	Learning Objectives
5.1.Elements of a sound approach to risk preparedness for cultural heritage	<ul style="list-style-type: none"> •Participants become aware of the two key elements of sound approaches to risk preparedness for cultural heritage
5.2.Planning framework for improving risk preparedness	<ul style="list-style-type: none"> • Participants gain understanding of the key elements of risk preparedness planning frameworks for the phases of preparedness, response and recovery • Participants become aware of how to use understanding of key elements of risk preparedness planning framework to make decisions to improve situation of cultural heritage they may be asked to address.
5.3.Principles of effective risk preparedness for cultural heritage	<ul style="list-style-type: none"> • Participants become aware of key principles of risk preparedness for cultural heritage and how best to use these in decision-making

OUTLINE OF ITEMS TO BE COVERED

5.1. Elements of a sound approach to improving risk preparedness for cultural heritage

A sound approach to improving risk preparedness for cultural heritage involves establishing both a general planning framework, and a set of principles to guide action.

The planning framework recognizes that risk preparedness may best be improved by working within the three phases of risk management programmes – Preparedness, Response, Recovery (which correspond to planning before disasters, actions during disasters, and planning and actions following disasters).

While in the past many principles of care for cultural heritage have been articulated, published and thus entered the field, most of these latter principles concern “intervention” – how best to act in order to repair, restore, rehabilitate etc. cultural heritage which has been damaged, neglected, or unsympathetically altered in order to bring it back to a suitable state of

presentation and use. The principles articulated below are principles of “prevention” – concerned with how best to establish conditions around the heritage which can ensure its long term health and survival.

The framework and principles proposed here should in turn be applied to different forms of cultural heritage (buildings, objects, towns, landscapes), and to different forms of hazard (fire, earthquakes, hurricanes etc.) to give them utility and immediacy in specific situations and circumstances.

5.2Planning framework for improving risk preparedness

By defining the elements of risk management for the preparedness, response and recovery phases, concerned officials or professional gain an overview of their options for improving risk preparedness for cultural heritage. They can attempt to associate costs, benefits and impacts (negative and positive) with each and thus be enabled to identify the most likely avenues for action open to them.

Preparedness phase

Efforts to improve the planning framework in advance of disasters (preparedness) can focus on a number of mutually supportive areas of action. These include:

- Reducing threats “at source”. This would involve reducing the possible sources of hazard for various threats at the source (for example, eliminating potential sources of fire).
- Reducing vulnerability “at source”. This could involve efforts to reinforce the ability of a property to withstand certain hazards (for example, the use of seismic structural reinforcement).
- Increasing response capacity “at source”. This could involve for example the installation of a wet or dry fire protection system in a building to protect objects and property. The choice of substance to be used in the system depends on the nature of the materials to be protected, and their susceptibility to various chemicals in use in these systems.
- Increasing warning time in advance of disasters. This could involve for example the use of smoke detectors or alarms to give advance warning of fire, or earthquake sensors used to provide advance indications of imminent seismic activity.
- Preparing emergency response plans. The most important component of the preparedness phase planning framework is the preparation of an emergency response plan. This plan should indicate actions to be taken in advance of a disaster which could feasibly undertaken “at source” (as described above) to reduce risk, and instructions to be followed at the moment of disaster, all as assigned to specific individuals. This plan will be built through consultations with all those work, live, work or use a particular place. The plan will include:
 - property documentation and analysis establishing priorities for salvage at the moment of disaster,
 - indications to civic defense teams how best to mitigate disasters with least loss to important cultural heritage (including for example, indications of where to create passages in an historic structure to channel smoke movement)
 - setting up a “chain of command” (communications network) which includes pre-assigned responsibility for dealing with heritage, and a clear place in the “chain”
 - advance preparation of adequately resourced response teams and emergency simulations (such as fire-drills or evacuation drills giving emphasis to what can be done to address cultural heritage needs without impairing aid to human beings at the moment of disaster)

- increase commitment to post-disaster efforts to secure cultural heritage, where this can be done without risk to human life. Following the fire in Edinburgh’s World Heritage City in 2001, city risk officials forbade heritage experts to apply well tested stabilization techniques for free-standing masonry walls (which had lost their lateral supports (floors and roof structures) during the fire). As a result, two weeks after the fire, without stabilization efforts to secure heritage buildings proposed by heritage experts, 12 of the 13 buildings on site collapsed, quite unnecessarily.
- an accessible summary. While the emergency response plan may exist in a comprehensive and detailed form containing all provisions, a short form of the plan should be readily available (on the back of every door in a facility, for example, and in every employee’s appointments agenda) and have been regularly updated, and distributed at frequent intervals, to those with responsibility to implement.

Response phase

Efforts during the response phase to improve the planning framework for risk preparedness will give most attention to implementation of the emergency response plan created during the preparedness phase of the planning framework.

Monitoring implementation of the emergency response plan:

Have all the provisions of the emergency preparedness plan been implemented?
Has planned priority attention for heritage issues and needs been provided as expected?

- If not, what went wrong and what can be learned for next time?
- Has the emergency response plan actually been accessible to all expected to use and implement it?
- Has it been possible to mobilize the conservation team - adequately equipped and prepared to act?

Recovery phase

Efforts during the recovery phase to improve the planning framework for risk preparedness will give attention to the following points:

- Mitigation of negative impacts: The goal here is to reduce or eliminate the losses occasioned by the disaster. This may include for example, comprehensive recording of heritage features by manual or photographic means prior to demolition or rebuilding, efforts to remove debris from flood ravaged buildings, efforts to repair the effects of fire fighting efforts (as for example, the removal of salts from frescoes soaked by salt laden water during response to the fire in the Chilandri

monastery at Mount Athos), or even provision of temporary housing to accommodate those whose homes have been lost during a disaster.

- Reconstruction of places of heritage value which have been destroyed: Actions here should be as much focussed on recovery of the sense of social stability and security which may have existed in a community before the disaster as well as physical structures. Social scientists speak of the need to re-build intangible social networks and support mechanisms enmeshed in communities as an integral part of physical recovery. (Recovery involves more than reinstatement of the physical!) Attention to physical recovery should also be given to replacement of lost structures in traditional forms and patterns where these have demonstrated the ability to withstand the forces associated with the threat.
- Using feedback from the disaster to improve emergency planning: Lessons learned during response and after the disaster, should result in revision of advance planning mechanisms and dispositions.

5.3 Principles of effective risk preparedness for cultural heritage.

The principles of “prevention” described below are meant to assist officials and professionals examine and evaluate available choices and to decide on the most appropriate course of action to improve risk management for cultural heritage in their particular situations. (These principles are derived from those presented in - Stovel, Herb. Risk Preparedness: A management Manual for World Cultural Heritage. ICCROM-UNESCO-ICOMOS-WHC. Rome. 1998. Pages 20-24.)

1. The key to effective protection of cultural heritage from risk is advance planning and preparation. Efforts devoted to advance preparation pay off in effective response, and in minimizing loss to important cultural heritage.
2. Advance planning for cultural heritage properties should be conceived of in terms of the whole property. All the aspects of a particular cultural property including buildings, structures and their associated contents and landscapes should be considered together, and planned for together, resulting in one integrated emergency response plan for any particular property.
3. Advance emergency response planning should be integrated. Emergency response planning for cultural heritage should ensure integration of relevant heritage considerations within a property's overall disaster prevention strategy.
4. **Minimum intervention: preparedness requirements should be met in heritage buildings by means which will have the least impact on heritage values.** While requirements and standards to contain risk (for example, the quantity of chemicals and rate of usage of visible sprinkler systems in historic buildings) should never be reduced, the design and installation of such systems should be achieved with least harm to the heritage values of the heritage being protected.
5. **Heritage properties, their significant attributes and the disaster response history of the property should be clearly documented as a basis for appropriate disaster planning, response and recovery.**
 - Documentation should address cultural and use significance and the relation of structure or elements to their settings in order to establish priorities for protection, and a record for possible later recovery (as Professor Lorentz and his students' Second World War drawings served to facilitate the reconstruction of the Warsaw ghetto in post-war Poland).
 - Documentation should also address past performance of structures, and objects etc. in withstanding the impacts of particular threats.
6. Maintenance programmes for historic properties should integrate a cultural heritage-at-risk perspective. Maintenance programmes should be drawn up to include planned response to all possible short and long term human and natural sources of decay and loss, not just the impacts of daily wear and tear, or the impact of ambient weather conditions.
7. Property occupants and users should be directly involved in development of emergency response plans. The involvement of all property occupants and users builds on their unique first hand experiences with the properties, and increases their understanding of the purpose, urgency and application of planned measures, and therefore the ultimate likelihood of effective response.
8. Securing heritage features should be a high priority during emergencies. While efforts to preserve heritage should never compromise efforts to preserve human life in an emergency situation, nevertheless heritage – as the tangible and intangible record of all past and current lives – deserves the utmost support in emergency response planning.
9. Following a disaster, every effort should be made to ensure the retention and repair of structures or

features that have suffered damage or loss. This goal requires advance commitment to:

- retaining heritage during salvage within emergency response plans,
- the obtaining of on-site, post-disaster expertise from professionals qualified to assess damaged heritage,
- recognizing the capacity of many forms of traditional forms of building construction to withstand the forces of various threats, and
- a commitment to apply the measures of applicable building codes in flexible fashion without endangering human life.

10. Conservation principles should be integrated where appropriate in all phases of disaster planning, response and recovery. Conservation principles should be used throughout all phases of the preparedness planning process, including:

- efforts to guide property documentation before, during and after emergencies to ensure that documentation is secure (backed up in multiple locations), reliable (accuracy established beyond question) and readily accessible.
- their application among the legal and normative instruments applied to the care of damaged or lost heritage elements
- insisting on the use of qualified conservation expertise in all decisions concerning the future of threatened or damaged heritage. This is to ensure that the decisions by public security officials integrate reliable conservation expertise concerning structural stability and any perceived threats to human life.

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Session 6. Risk preparedness strategies for various types of cultural heritage (collections, buildings, historic towns and landscapes)

Principal theme: This session attempts to apply and distinguish among risk preparedness strategies appropriate for different forms of cultural heritage.

Subjects	Learning Objectives
1. Types of cultural heritage	Participants become aware of the different types of cultural heritage susceptible to risk
2. Considerations in developing risk preparedness strategies for heritage collections, buildings, historic towns, and landscapes	Participants become aware of the key considerations pertinent when developing risk preparedness strategies for various forms of cultural heritage: objects in heritage collections housed in museums, individual buildings, structures or architectural complexes, historic towns and settlements, and territories of heritage value or cultural landscapes

OUTLINE OF SUBJECTS TO BE COVERED

6.1 Types of cultural heritage

The World Heritage Convention (art.1) offers a useful definition of cultural heritage, and for beginning to distinguish among various forms of cultural heritage. Three types of cultural heritage are defined:

- **“monuments:** architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;”
- **“groups of buildings:** groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;”
- **“sites:** works of man or the combined works of nature and of man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view.”

These can be generally understood to correspond to individual buildings or structures, to historic settlements or towns, and also to territories of heritage value (or cultural landscapes). Archaeological sites, viewed in the World Heritage context, may also be understood as “relict” cultural landscapes and are treated herein within the category of cultural landscapes. As well, having made the case earlier that all aspects of the heritage of a particular place, including the moveable and the immovable, deserve to be treated together, considerations offered here treat heritage objects and collections, displayed in museum settings or maintained in museum storage collections.

It is useful to review these categories in order to understand both similarities and differences necessary in the development of appropriate risk preparedness strategies.

6.2 Considerations in developing risk preparedness strategies for heritage collections, buildings, historic towns, and landscapes.

Objects and collections in museum settings

Efforts to improve risk management strategies for objects and collections in museum settings should take into account:

1. The material characteristics of the objects and any surface coatings or binding substances and the susceptibility of organic and inorganic materials present to various threats including moisture, variations in temperature, and threats of a more dramatic nature, such as earthquakes, floods, etc.
2. The likely impact of various key threats on the long term survival and health of objects and collections
3. The presence of early warning systems for all reasonable threats
4. The need to prepare a detailed and accessible emergency response plan which:
 - establishes priorities for protection, moving at the moment of emergency and salvage of damaged objects, and
 - details individual responsibilities, and provides for access to expertise, salvage materials and adequate working conditions during the emergency.
5. Planning for objects and collections in museum settings should make reference to all principles contained in relevant conservation charters, including ICOM doctrinal texts and standards, and documents produced by other professional bodies, including the APT-AIC New Orleans Charter (1990-91).

6.3 Individual buildings, structures or architectural complexes

Generally, these forms of cultural heritage have a single owner and therefore the process of developing a risk strategy is simplified, as they do not require the co-operation of many owners. Nevertheless, risk preparedness planning for individual buildings or structures should be developed in their larger geographical and political contexts, and in relation to appropriate national, regional and local support networks.

Risk preparedness strategies should ensure involvement of all individuals working with a building, from maintenance staff to property and project managers.

In dealing with individual buildings, it is particularly important to focus attention on the limitations of private owners (who do not necessarily share the resources and experiences of public sector owners).

- Planning to improve risk management for individual structures or buildings should be guided by a sound understanding of how the building's heritage values can be translated into significant elements, features or characteristics to be protected.

- Planning for individual buildings should make reference to all principles contained in relevant conservation charters, including the 1964 Venice Charter and the many related and subsequent ICOMOS doctrinal texts, ICOM guidelines and the doctrinal documents produced by UNESCO and regional organisations, such as the Council of Europe.

6.4 Historic towns and settlements

Risk management planning for historic settlements and towns must address the potential conflicts among competing interests and should be built around efforts to negotiate possible conflicts. The tension between development and conservation which characterizes planning in modern historic towns is also present in disaster preparedness. The best way to mitigate potential conflicts is to establish clear recovery guidelines before a disaster.

Preparedness planning in historic settlements and towns needs to reflect the different legal, social and economic contexts (market economy, transition economy, centrally planned economy) and particular ownership and responsibility patterns, traditions and mechanisms which are already in place.

Planning to improve risk management for historic towns should be guided by a sound understanding of how the historic town's heritage values are translated into significant elements, patterns of movement and use and social and cultural processes to be protected.

Planning for historic settlements and towns should take into account the references provided by appropriate conservation charters including the UNESCO Nairobi Recommendation Concerning the Safeguarding and Contemporary Role of Historic Areas (1976), the ICOMOS Charter on Historic Towns (Washington, 1987), and the Vienna Memorandum (2005).

6.5 Territories of heritage value or cultural landscapes (including archaeological sites, that is the "relict" cultural landscapes identified in the World Heritage context)

Territories of heritage value, cultural landscapes

Given the multiple ownership patterns which characterize cultural landscapes, and the often competing interests and objectives of these owners, effective risk preparedness among these partners will almost always benefit from creation of a co-ordinating commission which brings owners together and provides a platform to co-ordinate activity and resolve differences.

Effective risk management for cultural heritage must be built on contemporary efforts to define the “character” of such landscapes in ways by which key features and processes to be protected can be highlighted.

Planning for cultural landscapes and heritage territories should make reference to pertinent sections of UNESCO’s World Heritage Operational Guidelines, the results of UNESCO’s expert meetings on the subject. World Heritage paper Number 7 – Cultural Landscapes: the Challenges of Conservation, and World Heritage paper Number 6 – World Heritage Cultural Landscapes 1992 – 2002.

Archaeological sites

Planning to improve risk management for archaeological sites, as with individual buildings and structures, should benefit from the likelihood that such sites are in single ownership, usually that of a public authority.

Planning to improve risk management for archaeological sites should be guided by a sound understanding of how site heritage values can be translated into significant elements to be protected.

Planning to improve risk management for archaeological sites should focus on, among other things, the following:

- Establishing acceptable levels of risk for particular threats, in specific conditions (e.g., the stability of ruins, the height of flood waters, etc.)
- Focussing on preventative approaches, including public education, and public involvement.

Planning for archaeological sites should make reference to the principles contained in applicable conservation documents, including the UNESCO Recommendations for Archaeological Sites (New Delhi, 1956), the 1972 Council of Europe Convention on the Protection of the Archaeological Heritage, and the ICOMOS Charter for Archaeological Heritage Management (Lausanne 1990).

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Session 7 Risk preparedness strategies for earthquakes and other land movement based threats

Principal theme: This session applies the basic planning framework and principles of risk preparedness strategies to earthquakes and other land movement based threats

Subjects	Learning Objectives
7.1 Different forms of damage to property resulting from earthquakes and other land movement based threats	<ul style="list-style-type: none"> • Participants become aware of the various consequences and forms of damage which are generated by earthquakes and other land movement based threats
7.2 Developing risk preparedness strategies for earthquakes and other land movement based threats	<ul style="list-style-type: none"> • Participants gain understanding of the different elements of effective risk preparedness strategies for earthquakes and other land movement based threats • Participants become aware of the process necessary to produce an effective risk preparedness strategy for earthquakes and other land movement based threats

OUTLINE OF SUBJECTS TO BE COVERED

7.1 Different forms of damage to cultural heritage resulting from earthquakes and other land movement based threats

Earthquakes:

Buildings and their contents are especially liable to structural collapse and the damage related to the lateral forces transmitted by an earthquake.

- Laterally unsupported vertical building components may topple and crush other building components and objects within the building
- Joint fasteners and connections in buildings may be severed, displaced or broken
- Objects on walls or in display cases (especially those with a large height to width ratio) may fall or be displaced.
- Property alarm, and early warning systems may be damaged
- Humidity and temperature control systems for museums, collections and galleries may be damaged and rendered dysfunctional
- Emergency access to and from properties may be impeded by damage to landscape elements such as trees, or power or communications poles.
- Toppling and damage to landscape features such as trees, fences or unstabilised wall fragments
- Soil can liquefy which can lead to landslides or subsidence

- Destruction of animal and plant life, and loss of habitat for various species resulting in erosion of biodiversity
- Service supply lines – water, sewage, electricity, telephone, natural gas - may be blocked and severed, increasing risk of secondary damage from fire or water
- Transport infrastructure – roads, bridges, overpasses, culverts railways, waterways, airports and the vehicles using them – may be damaged potentially impairing the possibility of effective response of emergency vehicles and conservation teams.

Land movement based threats:

Other forms of land movement based threats include volcanoes (often associated with earthquakes), mud and land slides (sometimes generated by earthquakes), and avalanches. All of these threats have in common with earthquakes the likelihood that they will occur with little warning and act in cataclysmic – rather than gradual - fashion. As well as many of the results and damage forms described above, the action of the flowing materials can submerge and consume structures and the objects and people with them, as well as displace them in the direction of flow of the threat. In some cases, it should be noted that landslides, mudslides and avalanches may be caused by human action – the removal of trees from a hillside

and subsequent erosion often results in landslides in certain areas, and percussive activity of human origins can generate avalanches.

7.2 Developing risk preparedness strategies for earthquakes and other land movement based threats

Strategies for earthquakes:

Unlike provisions in place for fire protection, rarely do municipalities or civic authorities allocate responsibility for preparing for, or responding to earthquakes, to a single office or officer, even where seismic risk is high. This may be because the likelihood of earthquake occurrence seems too low to warrant such attention.

Attention to improving capacity to resist seismic risk usually arrives when buildings are being upgraded; at that point, the renovation project must respond to all current building codes, including seismic codes.

Nevertheless, even though earthquake risk may seem less immediate than fire for example, it is important that responsibility for earthquake protection be assigned to specific individuals within buildings or institutions, and also within communities. A community earthquake officer can proactively map vulnerability within buildings and provide appropriate guidance and direction to resources for upgrading, as well as being prepared beforehand to plan response, and at the moment of emergency, to help direct response.

Earthquake protection strategies should focus on preparation and response, as earthquakes can not be prevented, and warning time is often very limited. Hence emphasis should go to measures for reducing risk at source, improving earthquake resistance, improving early warning systems, and for developing a comprehensive and well tested response plan. Each of these is looked at below:

- Reducing risk at source.
 - Improving property maintenance, including upgrading electrical and fuel supply systems
 - Reducing sources of ignition to reduce likelihood of secondary fire
 - Ensuring suitable property uses in high risk zones; avoiding for example uses (e.g., restaurants) which can easily generate secondary fires
- Improving earthquake resistance,
 - Reinforcing a building to resist the lateral forces of an earthquake
 - “Isolation” of a building from the ground. This has been done – at great expense - for very important buildings including a 19th c. building destroyed by earthquake in the Kobe, Japan earthquake of 1995.
 - Reinforcing display fastenings and systems in museums and storage systems in reserve

collections to resist toppling or displacement by earthquakes.

- Improving early warning systems
 - Provision of in-ground warning and communications systems capable of providing advance warning of an earthquake. These should be able to measure the intensity of the earthquake and its intensity.
 - Improving fire response warning and response systems (again to control secondary effects of an earthquake)
- Developing a comprehensive and well tested response plan.

This should begin with a strong focus on risk analysis:

- Analysis of past earthquakes and their consequences
- Analysis of regional seismic behaviour patterns to predict timing, location and intensity of future events
- Analysis of vulnerability (ability to resist), building by building

The result of this analysis should be an emergency response plan which includes:

- Creation of a response team with clearly assigned roles and a communications chain of command; concern for heritage should be clearly located within this response framework.
- Assignment of priorities for preparation/ action on the basis of discussion with all involved (occupants, civil defense officials, heritage professionals). Remedial actions carried out to improve earthquake resistance should always be those which meet basic safety and stability requirements with least harm to heritage values.
- Assignment of priorities for protection (and possibly removal, where important objects and fittings may be concerned) in the event of an earthquake
- Creation of response teams with conservation capacity (experience and training), and access to salvage resources, transport, equipment, materials, and a “secure” storage and work zone etc.

Strategies for land movement based threats:

Particular considerations in developing risk preparedness strategies for volcanoes, mudslides, landslides and avalanches include:

- Efforts to map past incidents, to locate threatened cultural heritage and to analyse the sources of past activity is an important part of preparedness. Mapping for landslides and mudslides should include assessment of slope stability, type and composition of soil with assessment of likely behaviour when “wet”, water saturation, obstacles which may impede slides, and flows.

- It should be understood that human activity (“paving over paradise” as in the Joni Mitchell folk song) in occupied zones has permanently lowered the water table in settlement zones, and can not be reversed. These urban activities can have an impact on the moisture levels and movement patterns in adjacent territory.
- Where human activity may have increased likelihood of occurrence (removal of forests leading to soil erosion for example), then the possibility of undoing, reducing or mitigating human activity should be looked into. Possible protective measures for mud slides and land slides could include: reducing surface drainage of slopes, reinforcing steep slopes with heavy granular fill to prevent movement and increase sub-surface drainage, building of retaining walls and plantings; and control of inappropriate and exploitative land use.

the range of dynamic social, economic, cultural, and institutional conditions which recovery must meet as well as the more conventional physical requirements. This concern is frequently overlooked in the post-disaster rush to re-house families and quell likely incidence of disease. Equally often, the expensive settlements thus created are abandoned by those moved into them. Finally, urban settlement experts are often able to recognize and help recreate important urban patterns reflecting intangible and valuable communications and social organisation patterns built up over decades and centuries.

Recovery from earthquakes and other land movement based threats

Cultural heritage not badly damaged or collapsed as an immediate result of an earthquake is still very much at risk following the earthquake, as recovery forces searching for life and seeking to restore conditions for living may inadvertently dismiss the residual stability of heritage buildings, and seek to clear damaged structures of all kinds. After the earthquake, particular attention needs to be given to condition assessment by experienced heritage professionals to “defend” the heritage from needless removal or destruction, and to begin to plan physical recovery, identifying needs for shoring and stabilisation, reinforcement and replacement.

Among other concerns during recovery:

- Even sites being cleared should be cleared slowly and carefully to protect internal fittings, artwork, furniture and objects which may have survived, and to ensure their careful transport to secure salvage facilities. Clearing operations should also be carried out in ways which will protect latent archaeological resources. The clearing operation should be well documented for future reference, and even possible insurance claims.
- Security and fire alarm systems and on-site fire response equipment should be re-installed and rendered operational immediately to guard against secondary damage from earthquake or disaster consequences (gas line fires, for example) and looting.
- Recovery at the scale of the community must do more than provide equivalent physical space for families. The recovery team should include sociologists and anthropologists and those well able to estimate the nature of the social losses during the earthquake and best able to frame

Session 8. Risk preparedness strategies for hurricanes, floods and other water based threats

Principal theme: This session applies the basic planning framework and principles of risk preparedness strategies to hurricanes , floods and other water based threats.

Subjects	Learning Objectives
8.1 Different forms of damage to property resulting from hurricanes, floods and other water based threats	<ul style="list-style-type: none"> •Participants become aware of the various consequences and forms of damage which are generated by hurricanes, floods and other water based threats
8.2 Developing risk preparedness strategies for hurricanes, floods and other water based threats	<ul style="list-style-type: none"> •Participants gain understanding of the different elements of effective risk preparedness strategies for hurricanes, floods and other water based threats •Participants become aware of the process necessary to produce an effective risk preparedness strategy for hurricanes, floods and other water based threats

OUTLINE OF SUBJECTS TO BE COVERED

8.1 Different forms of damage to cultural heritage resulting from hurricanes, floods and other water based threats

Hurricanes

While the arrival of hurricanes or typhoons can generally be predicted days in advance, and emergency preparations begun in good time, the impact of hurricanes and typhoons can be as devastating as any natural disaster. Hurricanes can also unleash secondary disasters, such as the floods caused by the breaking of the levees in New Orleans caused by Hurricane Katrina. Hurricanes and typhoons can be associated with damage of the following kind:

- Wind-driven displacement of objects, vehicles, trees, parts of buildings (such as roofs), and their being driven into standing structures, causing secondary damage
- Ripping off of inadequately fastened roofs from buildings and structures, inundating contents and interiors with subsequent and often torrential rainfall
- Destruction of above ground power and communications delivery systems, impeding rescue and relief efforts
- Destruction of transport systems including roads, railways and air transport systems, also impeding rescue and relief efforts

- Ocean surges which can be propelled kilometres inland and have all the impacts of floods (as noted below)
- Heavy rains which can overwhelm drainage systems and penetrate building cellars and other low points within civic infrastructure systems, such as subway tunnels, sewage and waste water drainage systems, and buried water delivery and electrical supply systems

Floods

Floods may be gradual in nature – the rising waters of a river for example – or cataclysmic, as when dams collapse or protection systems weaken and release large amounts of water into a river system. Whether gradual or cataclysmic, they can have similar impacts:

- Floods can cause collapse or movement of a building and its contents. External features of a structure (such as porches) detached by the flood can act as water borne projectiles and cause secondary damage elsewhere.
- Floods can also weaken building foundations and adjacent supporting soil, further de-stabilising and weakening structures.
- Building services (such as electricity) can be inundated and even if not structurally damaged rendered inoperable, and inaccessible for repair. Response systems that depend on such services will

not be able to function. Plumbing systems for water and waste transport can be broken or damaged by flood waters, and may precipitate moisture into enclosed spaces, increasing likelihood of rot and fungal decay.

- Flooding can cause sewage systems to back up, and create long term health problems, and delay efforts to re-occupy buildings
- Water and related humidity can cause serious damage to objects and contents of structures (furniture, archival records, libraries, collections). Damage may involve detachment from original setting, corrosion of associated metals, destruction of surface finishes and paints, deposition of water borne impurities within materials, warping and bending of organic materials, wetting and discolouration of organic materials, and introduction of fungal decay and other forms of moisture borne bacteria and moulds.
- Floods may deposit layers of mud inside structures as waters recede. Depending on the quantity of mud deposited and the contaminants within it, buildings so affected may never again be fit for human habitation.
- At the municipal level, damage may include the destruction and disruption of municipal services (electricity, water, sewage, gas, telecommunication systems) and thus hinder relief efforts
- At the territorial level, defining landscape features of cultural landscapes and their associated patterns may be destroyed or washed away (including trees, road and transport systems, animal and plant habitats, even the watercourses themselves). Roads may be silted over, bridges moved or lost and normal transportation impeded. Flood debris may also be deposited along paths of the flooding and cause long term clean up problems.

Other water based threats

The principal water based threat not mentioned above is the likelihood of tsunamis. Tsunamis may arrive with less warning than hurricanes, and their severity can range from slight to severe depending on the intensity of the earthquake or volcanic action which may have precipitated them, the location of the epicentre of such activity in relation to coastlines and the slope of off-shore sea beds and on-land conditions. The consequences of tsunamis resemble closely those of floods, but may appear of greater severity because of the usual low level of advance preparation.

In cold countries, ice storms – caused when rain falls at freezing temperatures and coats all surfaces with ice – can result in severe damage, especially when this condition is sustained over several days. A 1998 ice storm in Montreal – following four days of freezing precipitation nearly brought about the evacuation of an island city, city of 3 million people, as power lines over-loaded with ice caused the power grid to collapse.

As temperatures fell to -20 degrees C, citizens had no access to water, transport, or electricity or heat.

8.2 Developing risk preparedness strategies for hurricanes, floods and other water based threats

While it may be possible to define the consequences of floods, hurricanes and other water based threats such as tsunami in distinct ways, in practice, as these phenomena are often related to each other and are often themselves consequences of each other, the strategies for improving risk preparedness below treat them together.

- Generally, the risk of floods or hurricanes is well known in communities (given their long time location on water courses, or in hurricane “paths”) and exposed municipalities usually have established local commissions to better protect the community and its constituent buildings. Nevertheless such commissions may not have the authority to act on known conditions; for example, the probable consequences of hurricane induced damage to local levees was well known to risk preparedness officials in New Orleans, decades in advance of Hurricane Katrina but elected officials could not be convinced of the need to act. Equally, unexpected incidents of great severity may exceed planning expectations or anticipations (such as the tsunami which devastated many thousand kilometres of south Asian coastline in 2005).
- Municipal commissions can do much to ensure measures to promote collective security (including advocacy to strengthen protection within river control systems; where such measures are not secure, commissions can also ensure provision of an adequate number of sandbags for example to restrain flooding, enhancing of flood resistance for individual buildings (access doors on the ground floors of buildings of Venice are equipped with external door jamb inserts which can deal with 95% of the “acqua alta” experienced by the city), recommendations and materials for preparing buildings to withstand hurricanes (e.g., x-taping of window panes, application of external wind shields in plywood, etc.) and preparation of local emergency response plans for both community and individual buildings.
- Adequate advance warning systems are critical for floods, hurricanes and other water based threats and if well designed, and well maintained in full operational capacity can help authorities alleviate the worst damage. However such systems usually depend on national level support, which is sometimes not available (for example, the Pacific area tsunami early warning systems in place but not operational at the time of the tsunami).

The elements of appropriate strategies to improve risk preparedness involve review of the considerations noted below:

- Floods, hurricanes, and tsunamis all will benefit from high maintenance of roofs, gutters and drainage systems, whose capacity may be taxed greatly during disasters. Electrical and HVAC system controls should be placed well above possible high water marks. Valuable objects should be placed above known high water marks or on upper floors of at-risk buildings.
- Buildings should be prepared to withstand wind and water forces through reinforcing of structure, foundations and roofs and the security of links between each to adequate levels.
- Emergency supplies and materials (protective enclosures for buildings, etc.) should be on hand and deployed for rapid installation.
- Protective levees and dykes surrounding at-risk communities should be maintained to respond to the highest strength wind or water forces imaginable. As well underground water and sewage drainage systems should be well maintained and designed to respond to the highest stress levels conceivable. (Recent floods of the subway system in New York City reflect poor maintenance of infrastructure and the capacity design limits: 2/3 of the known current high rainfall volumes).
- Water control systems in rivers should be tested and their ability to respond to envisaged disasters regularly monitored.
- The number and focus of monitoring stations should be carefully planned for hurricanes, floods and tsunami, and the communications network linking these should be itself immune from disaster induced damage.
- Emergency response planning should:
 - Be built on continuing efforts to provide the best and most up to date scientific data, including review of lessons from past experiences, and systematic mapping and analysis of climactic behaviour, river levels and behaviour over time, soil infiltration and water-table levels, shoreline movement and stability
 - Regularly involve local residents, flood officials and cultural heritage experts in analysis of risk for all components of a community in order to define short term protective measures which may be required, and priorities for protection in the case of a disaster.
 - The place of heritage objects and buildings in protective action should be established well in advance, and commitment to protective measures which will meet planning goals with least impact on heritage values assured.
 - Test the plan through regular drilling, and test simulations designed to find problems in implementation: how would individuals

communicate for example if the phone system failed? Drills and simulations should be supplemented with intensive training for those civic officials and heritage experts who may be on the front lines during disasters.

- Prepare inventories and documentation of fragile and significant objects, building features and buildings which may require special attention during emergencies
- Prepare a refuge to both store threatened objects and to provide salvage care for those damaged. Preparations should include provision of salvage materials (including refrigeration facilities for waterlogged objects), access to expertise or reliable first aid advice, provision of adequate space, organisation of a conservation team whose services can be rapidly put in place, adequate resources to sustain the refuge and allow it to operate for many months if necessary.

Recovery from floods and other water based threats

Cultural heritage not badly damaged or collapsed as an immediate result of flood, hurricane or other water based attack is still very much at risk following the disaster, as recovery forces searching for life and seeking to restore conditions for living may inadvertently dismiss the residual stability of heritage buildings, and seek to clear damaged structures of all kinds. After the conflict, particular attention needs to be given to condition assessment by experienced heritage professionals to “defend” the heritage from needless removal or destruction, and to begin to plan physical recovery, identifying needs for shoring and stabilisation, repair, removal (objects and fittings), reinforcement and replacement.

Among other concerns during recovery:

- Even sites being cleared should be cleared slowly and carefully to protect internal fittings, artwork, furniture and objects which may have survived, and to ensure their careful transport to secure salvage facilities. Clearing operations should also be carried out in ways which will protect latent archaeological resources. The clearing operation should be well documented for future reference, and even possible insurance claims.
- Special efforts will need to be made to clean, and remove mud left behind by floods, and to subsequently dry and decontaminate surfaces and materials in contact with the humid and often residual fungal and bacterial contamination.
- Security and fire alarm systems and on-site fire response equipment should be re-installed and rendered operational immediately to guard against secondary damage and looting.
- Recovery following flood damage at the scale of the community (for example, following the floods

associated with Hurricane Katrina in New Orleans, and must do more than provide equivalent physical space for families. The recovery team should include sociologists and anthropologists and those well able to estimate the nature of the social losses during the disaster and best able to facilitate discussion of heritage priorities within overall efforts. Its important that heritage advocates help frame the range of dynamic social, economic, cultural, and institutional

conditions which recovery must meet as well as the more conventional physical requirements.

- Finally, attention to urban patterns reflecting intangible and valuable communication and social organisation patterns built up over decades and centuries are a part of the heritage “structure” of communities and can guide reconstruction efforts to greater sensitivity to human needs.

Session 9. Risk preparedness strategies for fire

Principal theme: This session applies the basic planning framework and principles of risk preparedness strategies to dealing with fire.

Subjects and learning objectives

Subjects	Learning Objectives
9.1. Different forms of damage to property resulting from fire	Participants become aware of the various consequences and forms of damage which are generated by fire.
9.2. Developing risk preparedness strategies for fire	Participants gain understanding of the different elements of effective risk preparedness strategies for fire Participants become aware of the process necessary to produce an effective risk preparedness strategy for fire

OUTLINE OF SUBJECTS TO BE COVERED

9.1 Different forms of damage to property resulting from fire

Fire can cause severe damage to cultural heritage objects, structures, neighbourhoods and landscapes, directly and indirectly. The possible consequences of, and damage resulting from fire are described below:

- Objects and buildings may be fully or partially destroyed by fire.
- Heat, smoke and combustion by-products can damage structural elements, painted surfaces and finishes, and objects. Organic elements such as wood are particularly at risk, although the high temperatures associated with fire can reduce the

structural capacity of non-organic materials such as load-bearing stone and concrete, without visible signs of deterioration.

- Damage can also result from the use of water and other fire fighting agents used to arrest the spread of water.
- Municipal infrastructure systems and telecommunications systems may be destroyed or damaged by fire, and the exposure of systems for the delivery of natural gas can spread fire.
- In the landscape, fire can destroy animal, bird and plant habitats, trees, crops and plant life. Where ground cover is lost, secondary damage from increased runoff flowing over the barren surface of hills can cause mud slides or treacherous conditions.

9.2. Developing risk preparedness strategies for fire

As fire is a frequent occurrence in all communities, generally municipalities are well prepared to respond to it and to assist with preparedness measures aimed at individual buildings or structures. Frequently as well, in larger institutions, fire prevention officers are in place to guide protection and response efforts. The existence of such entities and officials provides a strong focus for efforts to strengthen protection against fire for cultural heritage. The development of an appropriate risk preparedness strategy should involve review of the considerations below:

The strategy should ensure that structures are used and managed in ways which limit the possibility of fire, through the means noted below:

- only uses which offer acceptable risk of fire to a building should be encouraged, or the potential for harm associated with those uses carefully considered and eliminated through appropriate precautions
- possible sources of ignition and combustible materials should be eliminated adjacent to fire or heating sources, and reduced to an absolute minimum elsewhere
- “hot work” within buildings (using blow torches, welding tools, paint-stripping etc.) should not be permitted on sites unless no alternative is available to achieve construction goals. If carried out, operations should be monitored carefully, during and following the work carried out, to prevent slow smoldering materials suddenly acquiring enough heat energy to ignite
- heat, smoke and fire detection systems connected to remote monitoring and response agents should be in place, and well maintained
- adequate and well designed short and mid term fire response systems (fire extinguishers, sprinkler systems) should be installed, and maintained in working order
- smoking should be banned from all buildings in all circumstances and the ban monitored and enforced

The strategy should also ensure that the ability of the building to withstand fire is enhanced and monitored through the means noted below:

- Ensuring that particular attention is paid to the condition of electrical installations, and that vulnerable aging components are repaired and upgraded to the highest contemporary standards.
- Chimneys and fireplaces should be cleaned and inspected regularly to ensure that flues are sound. Cooking and heating installations including furnaces, fuel tanks and supply lines should also be inspected to ensure safe use
- Fire retardant materials and finishes should be used to the extent possible within structures

- Fire separators (e.g., fire doors on exit corridors) should be installed along exit routes, between sections of buildings, and between buildings.
- Exploration of use of alternative means of protecting the exit path through the use of a positive air pressure system, to prevent smoke and flame penetration and spread
- Intumescent (fire-resistant) paints should be used to finish surfaces and structural elements where possible
- Lightning rods, carefully grounded and well maintained, should be installed on all structures to divert active electrical charges to ground.
- The strategy should ensure preparation of a fire response plan for the building or structure. The plan should be built through the collaboration of occupants, users, fire officials, and heritage conservation experts. Fire officials are more than ready to take heritage into account in responding to fires if heritage and heritage needs have been identified in advance. The plan should clearly define roles of all those involved so that actions taken with respect to heritage are taken by those with responsibility and relevant experience, according to already laid down and agreed to plans.

The provisions of such a strategy should touch on and include the following points:

- An evacuation plan for timely removal of people and designated objects, according to pre-arranged priorities
- A fire mitigation and control plan worked out in advance among fire officials and heritage conservation experts to ensure that control actions (creating smoke and air passages, use of water or fire retardant chemicals etc.) offer minimal damage to sensitive heritage areas or objects
- An access plan for those charged with fighting the fire (providing vehicular access, water supply access, and emergency access to all parts of the building).
- Water supplies (e.g., reservoirs, tanks, pumps, and flow systems etc.) and their accessibility should be assured and regularly monitored
- An egress plan for those departing the fire including installation of necessary signs and emergency lighting
- Regular use of fire drills and simulations to prepare occupants and users for emergency conditions
- Provision of durable (plasticized) single page versions of the emergency response plan in every office and work space posted in permanently accessible locations
- Regular training of fire officials and heritage conservation experts to improve collaboration in care and treatment of valuable heritage in fire conditions
- Designation of a secure storage area prepared to receive objects being relocated or which have been fire damaged. The secure area should be well

equipped with first aid materials, of sufficient size and layout to safely accommodate moved materials and salvage of damaged materials, and supported with provision of accessible expertise and sound advice

- Full documentation of the condition, material composition, repair history of building components and fittings, and collections and objects, which can be accessed during fire conditions
- Documentation of heritage features, be they landscape attributes, objects in collections or fittings in houses, should be prepared to levels of detail adequate to assist evaluation of heritage significance (and hence priority for care and attention in an emergency), to support salvage, and to guide recovery
- Exploration of fire suppression systems which offer least negative visual impact to the heritage structure in which they are situated, without impairing effectiveness. Attic spaces and other unfinished spaces (e.g., within tower or spires) may provide appropriate locations for installation of otherwise visually intrusive holding tanks and related equipment.

Recovery from fire

Cultural heritage not badly damaged or collapsed as an immediate result of fire is still very much at risk, as recovery forces searching for life and seeking to restore conditions for living may inadvertently dismiss the residual stability of heritage buildings, and seek to clear damaged structures of all kinds. After the fire, particular attention needs to be given to condition assessment by experienced heritage professionals to “defend” the heritage from needless removal or destruction, and to begin to plan physical recovery, identifying needs for shoring and stabilisation, protection, possible removal of salvageable elements, reinforcement and replacement.

Among other concerns during recovery:

- Even sites being cleared should be cleared slowly and carefully to protect internal fittings, artwork, furniture and objects which may have survived, and to ensure their careful and stable transport to secure salvage facilities. Clearing operations should also be carried out in ways which will protect latent archaeological resources. The clearing operation should be well documented for future reference, and even possible insurance claims.
- The negative effects of fire fighting should also be mitigated as quickly as possible. Charred objects should be carefully sifted to recover salvageable objects or elements. Residual water and fire fighting chemicals should be removed by least damaging physical or mechanical methods, including sponges

if necessary. The building should be thoroughly dried through dehumidification and improvement of air flows.

- Security and fire alarm systems and on-site fire response equipment should be re-installed and rendered operational immediately to guard against re-ignition of fires, and looting.
- Recovery at the scale of the community where a large scale fire has occurred must do more than provide equivalent physical space for families. The recovery team should include sociologists and anthropologists and those well able to estimate the nature of the social losses created by the disaster and best able to frame the range of dynamic social, economic, cultural, and institutional conditions which recovery must meet as well as the more conventional physical requirements.
- Finally, urban settlement experts are often able to recognize and help recreate important urban patterns reflecting intangible and valuable communications and social organisation patterns built up over decades and centuries, and invaluable in restoring social stability.

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Session 10. Risk preparedness strategies for dealing with climate change I and II

Principal theme: this session aims to introduce the basic concepts of climate change, and explore implications for those attempting to include such concerns in overall risk preparedness plans for cultural heritage

Subjects	Learning Objectives
1. Framing the current discussion on climate change	<ul style="list-style-type: none"> • Participants will become aware of the complex and sometimes political nature of this discussion • Participants will become aware of the arguments for and against climate change, and of the current state of the debate in scientific/ political exchange • Participants will become aware of the impacts of climate change on natural and cultural heritage in a variety of contexts
2. Developing strategies for natural and cultural heritage threatened by climate change	<ul style="list-style-type: none"> • Participants become aware of the main elements of strategies useful in responding to the prospect of climate change for natural and cultural heritage • Participants become aware of the need to fully integrate climate change strategies within overall risk preparedness strategies

OUTLINE OF SUBJECTS TO BE COVERED

1. Framing the current discussion on climate change

- It is important to recognize that climate change is a relatively new issue, that only recently has consensus emerged that climate change can be attributed to human activity, that we can find ways to measure climate change, and that we need to find ways to confront this;
- This distinguishes discussion of this subject from others treated in this course, as with climate change, we can not turn to decades of experiences and case studies for the construction of well tested risk preparedness or risk reduction strategies. With climate change, we are essentially researching, testing, exploring how to best understand the impacts of climate change and how best to develop effective strategies to counter climate change.
- It is also important to recognize that in a risk preparedness framework, “climate change” is a hazard, and that measuring risk involves - as with other threats or sources of hazard – measuring the extent of the hazard associated with various climate change threats – and the degree of vulnerability associated with each threat.
- But while recognition of climate change itself may be fairly new, climate change may manifest itself indirectly in very familiar forms of hazard: increasing precipitation, floods, desertification, atmospheric acidification, landslides and mudslides, hurricanes, etc.
- To date, most attention given to assessing and responding to the impact of climate change on cultural heritage, has been pioneered in the World Heritage framework. As a consequence, this module has been developed primarily through reference

to published reports on discussions taking place in the World heritage context. As the World Heritage Convention links cultural and natural heritage, the treatment of the subject in this session builds on and links approaches being developed in both areas.

The nature of the climate change debate:

The following may be used as a simple climate change primer to introduce the issues independently of any effort to apply this understanding to improving care for threatened cultural heritage.

- As recently as two and three years ago, major political leaders in the world (including the leaders of Canada and the USA) were stating that there was no proof that climate change – if it existed – was caused by human activity. The USA refused to sign the Kyoto Protocol and others who had signed appeared not to be taking the targets seriously, or backtracking on their commitments.
- The real issue for debate has been “global warming” - the perceived increase in global temperatures given long term increases in “greenhouse gas emissions” in the atmosphere: is there global warming? And if so, what is the cause? Increasing greenhouse gas emissions? And if so, from what source(s)?
- Climate Change is defined by the United Nations Framework Convention on Climate Change (UNFCCC), in its Article 1, as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”. The UNFCCC thus makes a distinction between “Climate Change” attributable to human activities altering the atmospheric composition, and “climate variability” attributable to natural causes.
- Greenhouse gases are gases (mostly carbon dioxide) which allow light from the sun to penetrate the atmosphere but which also trap a portion of the outward bound infra-red radiation, thus warming the air, and eventually the planet and its surfaces.
- Over the last two decades, many scientists have attempted urgently to draw the attention of world leaders to their perception that global warming is increasing, and to stress both human sources (industrial, commercial, and personal consumption of energy sources which increase atmospheric carbon dioxide) and the need for remedial action
- Their efforts culminated in the adoption of an international treaty, the United Nations Framework Convention on Climate Change (1994) which set

an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. It recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases. The Convention which entered into force on 21 March 1994 has been ratified by 191 countries.

- The Climate Change Convention provided for government to:
 - gather and share information on greenhouse gas emissions, national policies and best practices
 - launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries
 - cooperate in preparing for adaptation to the impacts of climate change
- The 1997 Kyoto Protocol is an amendment to the 1994 United Nations Framework Convention on Climate Change which goes further than that Convention in assigning targets for change. The Protocol entered into force on 16 February, 2005. The Protocol assigns mandatory greenhouse gas emission reduction targets for those countries which have signed the Protocol. The goal of the Kyoto Protocol is to stabilize greenhouse gas concentrations in the atmosphere at levels sufficiently low, to end human interference with the climate system. Some other so-called developing countries such as India and China which have ratified the Protocol, are not assigned carbon emission reduction targets.
- In spite of these strong international efforts to address the problem, a great number of strong voices have suggested that there was no science to back up the campaign to put an end to global warming, suggesting that global warming was a myth, or at best not proven, and that its sources were very much in dispute. These voices included many prominent figures from the field of “science”, including the author Michael Crichton (author of Jurassic Park) whose 2006 novel “State of Fear” presents a strong factual case to support his view that global warming does not exist.
- Indeed, the growing strength of those who oppose efforts to reduce global warming has effectively stalled full implementation of the Kyoto Protocol as an international tool, at least for the time being.
- A part of the difficulty of developing a credible scientific overview has been that the work of individual scientists, has often been often carried out in isolation

from each other, and equally, that that research has often only focussed on component parts of the larger problem. These limits have not allowed the scientific community to speak with one clear voice on this subject. The creation of the Intergovernmental Panel on Climate Change (IPCC) Working Group to advise the UNFCCC has made possible elaboration of a broad and comprehensive scientific basis for climate change, and for scientific forums to develop a clear overall overview of the issues.

- And with the publication/ release of Al Gore's book/ movie "An Inconvenient Truth" in 2006 and the release of the first IPCC Working Group Reports in spring 2007, the scientific basis for climate change has become irrefutable. These latter reports have permitted development of a strong consensus among thousands of scientists internationally about the existence of climate change, the human sources of climate change, the associated impacts and their rate of increase.
- Even long time climate change scoffers such as President Bush (USA) and Stephen Harper (Canada) have been forced over the last year to take the challenges much more seriously than in the past.

Impacts of climate change on natural and cultural heritage:

The World Heritage working paper on climate change presented to the 30th session of the World Heritage Committee provides the following brief overview of impacts of climate change on natural and cultural heritage

Natural heritage:

Impacts may be direct and physical or indirect affecting the ecological systems in which the heritage is situated.

Direct impacts:

- "Ice caps, glaciers and permafrost, sea ice, ice and snow cover especially in polar and mountain regions are melting.
- Temperatures and atmospheric CO₂ concentrations are increasing and impact directly or indirectly on plant and animal species and, in turn, on ecosystems.
- Coral reefs are bleaching.
- The growing season of plants is lengthening, plant and animal ranges are shifting poleward and upward in elevation, and with the help of increased temperatures and atmospheric CO₂ concentrations, invasive alien species increasingly impact upon indigenous species.
- The composition and configuration of biotic communities is changing because of climate-change induced species range shifts and extinctions

Indirect impacts:

- All these physical and biological changes affect ecosystem functioning, such as in relation to nutrient cycling, and the provision of ecosystem goods and services with significant impacts on human livelihoods. Thus, socio-economic activities, including agriculture, fishery and tourism, are also being impacted on increasingly, for example through changes in freshwater supply. Finally, Climate Change interacts with other global change drivers such as land use change and socio-economic change, potentially exacerbating impacts on people and their environment." (Natural heritage impacts quoted from World Heritage Committee working documents.)

Cultural heritage:

Impacts may be direct and physical or indirect impacts affecting the social, cultural and economic systems in which the heritage is situated. These include:

Direct impacts:

- Short and long cycles of change to hydrological, chemical and biological processes of the soil may upset long standing balance among these parameters and accelerate degradation of archaeological evidence preserved in the ground because it has reached a balance with the. these parameters
- The wall surfaces and floors of historic buildings may be subject to greater salt mobilisation and consequent damaging crystallisation on decorated surfaces through drying where soil moisture increases and is able to migrate through these materials.
- Timber and other organic building materials may be subject to increased biological infestation by pests migrating from other altitudes and latitudes.
 - Flooding may damage building materials not designed to withstand prolonged immersion, and post flooding drying may encourage the growth of damaging micro-organisms and moulds. Archaeological sites may also be at risk from erosion accompanying flooding.
- Increases in storm severity and wind strength in storms can lead to structural damage in historic buildings, and the loss of roofs.
- Heritage objects and collections may be at risk from higher levels of humidity, higher temperatures and increased UV levels.
- Increasing desertification, salt weathering and erosion can threaten cultural heritage in desert or near desert areas.

Indirect impacts:

- Indirect impacts may occur in a number of areas.
 - The character of cultural heritage is closely related to the climate. The rural landscape has developed in response to the plant species that are able to flourish

in different climatic regimes. The urban landscape and the built heritage have been designed with the local climate in mind. The stability of cultural heritage is, therefore, closely tied to its interactions with the ground and the atmosphere.

–Equally, climate change will have physical, social and cultural impacts on the way people relate to their environment, and on they live, work, worship and socialise in buildings, sites and landscapes with heritage values. Climate change and the socio-economic changes that will result may have a greater possible impact on the conservation of cultural heritage than climate change alone. (Natural heritage impacts paraphrased from World Heritage Committee working documents.)

Overview of impacts:

In the short term and even mid term, the heritage properties most at risk are those in lowland settings, adjacent bodies of water. Water levels in some areas are rising at rates which are hard to measure, but even small changes in sea level can have enormous impacts. (In recent flooding, in August 2007, 70% of Bangladesh was under water.) Apart from impacts associated with increasing flood action, changing ground water levels can cause injurious migrations of salts through buried and above ground structures and other indirect effects. It would be worth asking participants from Caribbean countries – all encircled by water, and as a result of climate change, possibly subject to greater hurricane incidence and intensity in future: what initial assessment they might have re the susceptibility of their home communities to climate change impacts?

2. Developing strategies for natural and cultural heritage threatened by climate change

Actions to safeguard heritage from the effects of climate change can be understood to fall in three areas (following a model proposed in World Heritage Committee working papers):

Preventive actions focused on monitoring, and advance mitigation of the impacts of climate change

- **Monitoring:** it is important to attempt to measure and understand change at threatened sites in different ways.
- This may involve direct measurement of the impact of climate change on important aspects of cultural heritage, for example, measuring the loss of surface limestone in acidic urban atmospheres over time.
- This may also include researching past climactic behaviour at sites as far back into the past as reliable records can be found.
- Where past impacts are difficult to measure, then urgent attention should be given to establishing baseline measures against which future changes

can be accurately measured.

- Monitoring should also be carried out to the extent possible on a comparative basis, comparing actions and reactions among comparable sites in both similar and non-similar situations.
- Monitoring involves research to help establish effective and reliable climate change indicators
- **Mitigation:** it is important to plan actions which can reduce potential impacts of climate change on heritage. This can mean giving attention to the following:
 - Shielding heritage through erection of barriers or impact reducing mechanisms (as for example the planned Venice lagoon barrier)
 - Reducing other forms of impact on the property, e.g., tourist visitation
 - Increasing maintenance efforts to ensure that properties are better able to resist impacts, e.g., reducing increasing insect infestation or mould attacks. It is important to direct maintenance to root causes of problems as much to symptoms (e.g., to install damp-proof courses in masonry walls rather than just remove unwanted efflorescence). Equally, such measures should be designed not just to respond to particular isolated symptoms but to address the behaviour of the system as a whole.

Corrective actions focused on adaptation of the heritage to changing circumstances

Adapting the heritage property itself: Adaptations can be addressed to anticipated new circumstances where monitoring may indicate likely consequences of climate change, e.g., new water levels, increased precipitation levels.

- Adaptation of the property will generally consist of efforts to reinforce or strengthen structures or materials.
- Such reinforcement efforts will generally follow already established patterns or approaches in structures, e.g., means of strengthening structures for increased frequency of hurricanes will follow accepted practice for such work.

Adapting property management patterns: to anticipated new circumstances. This can mean giving special emphasis to a number of areas:

- strengthening use of the integrity component in natural and cultural heritage property management, ensuring for example, adequate size of terrains associated with land or water based eco-systems, in order to buffer negative impacts
- exploring possibility of drawing on traditional knowledge to inform responses to climate changes

- strengthening regular monitoring activity in well defined areas related to climate change measurement
- re-evaluating management priorities in relation to climate change
- linking local efforts to support available from regional and national agencies involved with climate change
- increasing training of staff and all those involved with property management re nature and impacts of climate change, and strengthened and realigned monitoring efforts

Sharing knowledge actions to increase capacity among concerned professionals, and awareness among concerned members of the public.

- At this stage, possibly the most important means to promote effective and useful sharing of knowledge is network building among those in the early stages of exploring the implications of climate change for their properties.
- Network exchange will allow rapid sharing of lessons gained, identification of research priorities, promotion of forums for direct exploration of key themes, selection of experiences worth publication, and ultimately provide a shared basis for advocacy re needed policy changes, resource allocations, and management priorities

Once a set of strategic orientations has been adopted to enhance attention being given to evaluating possible climate change impacts and preparing possible responses, it is important to begin to integrate these within already formulated risk preparedness strategies.

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United Nations

<http://www.un.org/climatechange/> A new United Nations Internet site, "Gateway to the UN System's Work on Climate Change", that highlights the wide-ranging work of the various parts of the United Nations system on climate change. This website makes it easier for Internet users to find information on climate change from across the United Nations system.

<http://www.un.org/climatechange/ipcc.shtml>

Intergovernmental Panel on Climate Change (IPCC) Working Group Reports. The Intergovernmental Panel on Climate Change has been established by WMO and UNEP to assess scientific, technical and socio-economic information relevant for the understanding of climate change, its potential impacts and options for adaptation and mitigation. It is currently finalizing its Fourth Assessment Report "Climate Change 2007", also referred to as 'AR4'. The reports by the three Working Groups provide a comprehensive and up-to-date assessment of the current state of knowledge on climate change. The Synthesis Report integrates the information around six topic areas. For each of the three first working groups, the full scientific report and a summary for policy makers have been provided. These may be downloaded by going to the IPCC web site named above.
Working Group I: "The Physical Basis of Climate Change"
Working Group II Report: "Impacts, Adaptation and Vulnerability"
Working Group III Report: "Mitigation of Climate Change"
Working Group IV Report: "Synthesis Report"

- To be launched in Valencia, Spain, on 16 November 2007

Other

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Session 11. Risk preparedness strategies for armed conflict

Principal theme: This session treats the impact of armed conflict on cultural heritage and reviews possible strategies to improve its protection.

Subjects	Learning Objectives
11.1 The context for the protection of cultural heritage during armed conflict	Participants become aware of the important points to consider in assessing possibilities to improve heritage protection for cultural heritage in armed conflict (consequences of armed conflict for cultural heritage, obstacles to improving protection for cultural heritage in times of armed conflict)
11.2 The role and nature of the Hague Convention	Participants become aware of the nature of the Hague Convention and the role played by it in improving protection of cultural heritage in times of armed conflict
11.3 Developing a strategy for the protection of cultural heritage in the event of armed conflict	Participants become aware of the various strategic options available in developing a strategy for protection of cultural heritage subject to armed conflict, and how best to prepare a comprehensive overall strategy

11.1 The context for the protection of cultural heritage during armed conflict

It is difficult for many to discuss seriously the consequences of armed conflict on cultural heritage. This difficulty comes from those with legitimate moral concerns about war and its presence in human existence. Why should we talk about making war better? Why should we talk about mitigating the worst impacts of war? How can we talk about saving property, cultural or otherwise – no matter how valuable – when human beings are the victims of war? Why don't we focus all attention on putting an end to war, and addressing the root causes of war?

Nor have efforts to preserve cultural heritage in wartime always been rewarded with success. Examples of perverse use of such efforts abound – the Blue Shield flag – prescribed for placement on cultural heritage in war zones by parties signatory to the Hague Convention (to protect cultural heritage in times of armed conflict) has frequently been used to provide warring groups with important symbolic targets.

Nevertheless, this preoccupation – making war better – has been the subject of a UNESCO Convention (The Hague Convention, more formally the “The

Convention for the Protection of Cultural Property in the Event of Armed Conflict” - 1954), and experience has shown that efforts in this direction can result in significant reductions of loss of cultural heritage in times of armed conflict.

Discussing the context for such efforts involves first looking at the consequences of armed conflict for cultural heritage and also looking at the obstacles to developing strategies to improve protection for cultural heritage in times of armed conflict.

Consequences of armed conflict for cultural heritage

- Armed conflict can result in the destruction, full or partial, of structures and their contents, by direct or indirect means. Fires associated with bombing or missile explosions can cause as much or more damage as the original explosive impact.
- Water damage from those trying to extinguish fires can also result in significant damage to structures and contents.
- Partly damaged building components such as the shelled roofs of the World Heritage city of Dubrovnik during the 1991 hostilities, can leave a structure open to further wind and water damage.

- During the unstable social conditions accompanying armed conflict, heritage structures and their contents may be increasingly subject to looting of contents and interior and exterior features (such as the heads of stone statues, removed from the Angkor site in Cambodia during the conflicts of the 70s and 80s), or illegal “squatting” in heritage structures by occupying forces in conflicts (such as the use of churches or town halls to billet troops)
- The destruction of heritage structures of symbolic value, e.g., the destruction of the 400 year old Ayodhya Mosque in India by Hindu populations believing the mosque built on Hindu holy places of great importance (the birthplace of Rama), resulted in the loss of the intangible rituals associated with use of the mosque by the Islamic faithful.
- At an urban or territorial scale, armed conflict may threaten the destruction of above ground landscape patterns, natural habitats for plants and animals, and below ground archaeological materials
- As well, at the scale of the human settlement, the destruction of human life, and the social, cultural and economic fabric of a community, may destroy the long term sustainability of a community and therefore remove the basis for the continued use and maintenance of important cultural heritage
- In the final analysis, it is important to realize that no one set of physical consequences may be associated with armed conflict and that those attempting to improve protection will need to anticipate a wide set of possible consequences

Obstacles to improving protection of cultural heritage in the event of armed conflict are generally attitudinal, and include the following:

- While damage and loss may be local, unlike other forms of risk preparedness where emphasis is put on developing local responses and local strategies, developing a strategy to protect cultural heritage in times of armed conflict will require efforts at the national level to mobilize those involved with Departments of National Defence or similar bodies. This infers the need to conciliate very different points of view and priorities at local and national level.
- Military officials tend to attempt to limit constraints (including heritage constraints) on their ability to achieve military objectives. This military outlook is hard to constrain in war time conditions, even where countries have signed the Convention, where a choice to respect cultural heritage by not bombing it might endanger the lives of military personnel. This sense of prevailing military imperative is also evident in the attitudes of those in the Allies’ Bomber Command who chose to destroy Europe’s most splendid

Baroque City (Dresden) and tens of thousands of its civilians in order to quicken the end of the war and thus save the lives of military personnel. At the same time, on a more positive note, it is well known that American commanders operating in Japan, in the latter days of the war, chose not to bomb Kyoto and Nara, home to some very important elements of Japan’s cultural heritage, even though such might have gained them military advantage.

- Governments are generally indifferent about implementing the Hague Convention. Among UNESCO Conventions, the World Heritage Convention, given its celebration of shared heritage on the planet, is by far the most popular. Most countries find little time for the Hague Convention, even if they support its general objectives, because the Convention does not celebrate heritage or humanity, but rather seeks to limit or control governmental behaviour to protect heritage in certain situations (that is, armed conflict).

11.2. The role and nature of the Hague Convention

“The Convention for the Protection of Cultural Property in the Event of Armed Conflict”, known popularly as the Hague Convention was adopted by UNESCO in May 1954. It followed on earlier international agreements in the Hague in 1899 and 1907 and in Washington in 1935 to attempt to define rules for the war time protection of cultural heritage.

As of 2007, 117 States had ratified the Convention or indicated their intention to do so.

The Hague Convention, like the World Heritage Convention, is an international treaty which binds all those governments who ratify it, to observe its obligations.

The Convention’s principal articles touch the following points:

- Definition of cultural property: including both moveable and immovable cultural property, museums and storage collections and historic centres, all as defined in Article 1 of the Convention.
- Peace time preparation of safeguarding measures – article 3.
- States agree to protect cultural property on its own territory, or that of other “High Contracting Parties” by refraining from its use in ways which could expose it to destruction, and be refraining from acts of hostility directed to the cultural heritage of others – article 4.
- The use of a special emblem – the Blue Shield – to mark cultural heritage under “special protection” –articles 6, 10, 17.

- Preparation of protected “refuges” to shelter threatened moveable cultural property which has been placed on an “International Register of Cultural Property under Special Protection” – article 8.
- Events in the early 90s during the break-up of Yugoslavia, in Cambodia, and in other countries where cultural heritage was mistreated by signatories of the Convention prompted UNESCO to re-think the Convention and its effectiveness. A 1993 review of the Convention, entitled “Review of the Convention for the Protection of Cultural Property in the Event of Armed Conflict”, prepared by Professor Patrick Boylan, led among other things to a confirmation of the importance of the Convention in protecting cultural heritage in conflict-torn countries, and to the development of a Second Protocol, and to a number of focussed suggestions for improvement.

The Second Protocol proposes a number of new definitions and concepts to improve implementation of the 1954 Convention. These include:

- offering “enhanced protection” to “cultural heritage of the greatest importance for humanity” if both protected adequately by the State responsible and not used for military purposes or to shield military sites. This mechanism is supported by a new List, the List of Cultural Property Under Enhanced Protection, and an intergovernmental committee established under the new Protocol, the Committee for the Protection of Cultural Property in the Event of Armed Conflict. These focus primarily on efforts to limit “military necessity” (used initially in the 1954 Convention to provide parties in conflict with considerable freedom to decide when the provisions of the Convention actually applied).
- limiting the use of “imperative military necessity” as defined in the 1954 Convention. The 1954 Convention, formulated in the years following World War II, sought to protect cultural heritage in conditions close to those which occurred in that all encompassing war. The new Protocol clarifies when military force may be used in conflicts, limiting such use to attacks where the cultural heritage is itself a military objective, and there are no feasible alternatives.
- applying the provisions of the Second Protocol equally to international and non-international armed conflicts.

The Second Protocol is only binding on those parties who choose to accept it

11.3. Developing a strategy for the protection of cultural heritage in the event of armed conflict

As noted earlier, strategies need to be developed at national levels to ensure the meaningful involvement of senior defence personnel. Such strategies need to address:

- Peace time development of preventive measures, among all interested stakeholders: senior defense officials, senior custodians of the country’s cultural heritage, concerned NGOs such as those involved with the ICBS (ICOMOS, ICOM, ICA, IFLA), the National Commission for UNESCO etc. Such measures could include:
 - the identification of properties for inclusion in the Convention’s Register and List,
 - preparation of maps for use by the military noting locations and “corridors” to be avoided if possible
 - planning for use of the Blue Shield emblem,
 - identification of refuges which could accommodate movable cultural property, and preparation of such refuges with appropriate materials, “first aid for objects” manuals, tools, work space, adequate ambient conditions, access to expertise
 - development and provision of information concerning war time protection of threatened structures and objects for distribution to owners and users,
 - advance preparations for emergency salvage response: list of objects for priority removal, assembly of conservation materials and facilities for use during salvage operations, access to qualified and experienced conservation
 - training which brings military personnel and heritage professionals to work out collaborative response modes together at the technical level
- Military forces may wish to designate a cultural heritage protection officer to assist with developing the preventive measures named above, to monitor implementation of adopted measures, and to follow up during conflicts. Such individuals will advise senior military personnel on their duties, responsibilities and opportunities for collaboration with heritage officials and professionals, help develop and implement programmes promoting respect for cultural heritage among military personnel, and help supervise preparation of refuges and other salvage responses during conflicts.
- During armed conflict, these same cultural heritage protection officers should be placed in the lines of military action in order to best advise their officers on their duties and responsibilities during conflict, and to help organise and manage suitable on site response where such protected heritage is damaged or threatened.

Recovery from armed conflict

Focussing on recovery for cultural heritage in the face of armed conflict is a sub-activity of “post war reconstruction” efforts, long the subject of strong and well developed international co-operation efforts. Nevertheless some important considerations in developing a recovery strategy for cultural heritage harmed by armed conflict are presented below.

Cultural heritage not badly damaged or collapsed as an immediate result of armed aggression is still very much at risk following hostilities, as recovery forces searching for life and seeking to restore conditions for living may inadvertently dismiss the residual stability of heritage buildings, and seek to clear damaged structures of all kinds. After the conflict, particular attention needs to be given to condition assessment by experienced heritage professionals to “defend” the heritage from needless removal or destruction, and to begin to plan physical recovery, identifying needs for shoring and stabilisation, repair, removal (objects and fittings), reinforcement and replacement.

Among other concerns during recovery:

- Even sites being cleared should be cleared slowly and carefully to protect internal fittings, artwork, furniture and objects which may have survived, and to ensure their careful transport to secure salvage facilities. Clearing operations should also be carried out in ways which will protect latent archaeological resources. The clearing operation should be well documented for future reference, and even possible insurance claims.
- Security and fire alarm systems and on-site fire response equipment should be re-installed and rendered operational immediately to guard against secondary damage (gas line fires, for example) or re-ignition, and looting.
- Recovery following armed conflict at the scale of the community must do more than provide equivalent physical space for families. The recovery team should include sociologists and anthropologists and those well able to estimate the nature of the social losses during the conflict and best able to facilitate discussion of heritage priorities within overall efforts. Its important that heritage advocates help frame the range of dynamic social, economic, cultural, and institutional conditions which recovery must meet as well as the more conventional physical requirements.
- Finally, attention to urban patterns reflecting intangible and valuable communications and social organisation patterns built up over decades and centuries are a part of the heritage “structure” of communities and can guide reconstruction efforts to greater sensitivity to human needs.

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Session 12. Improving risk preparedness: strengthening and implementing of risk preparedness plans

Principal theme: This session attempts to provide an overview of various means to strengthen and implement effective risk preparedness plans. This session is essentially a review of material covered previously in the module, and participants are invited interactively to draw on their memories of earlier sessions to respond to questions. This session also provides a short information segment on what may be done at national level to improve conditions for risk preparedness for cultural heritage.

Subjects	Learning Objectives
1. What are the keys to successful strengthening and implementing of risk preparedness plans?	Participants explore the possible key elements of approaches to strengthening and implementing of risk preparedness plans, on the basis of the materials taught in the module
2. Improving risk preparedness for cultural heritage at the national level	Participants become aware of the possible ways to strengthen conditions for improved risk preparedness for cultural heritage at the national level
3. What can you (the participant) do?	Participants explore the possible approaches they may take within their own (or known) working contexts, in order to improve risk preparedness for cultural heritage

OUTLINE OF SUBJECTS TO BE COVERED

1. The keys to successful strengthening and implementation of risk preparedness plans

There are a number of major angles of attack from which to assess, strengthen and implement risk preparedness plans. These should be reviewed in the following way:

- Assessing the effectiveness of “the elements of a sound approach to risk preparedness” reviewed earlier (Session 5 - Improving risk preparedness: elements of a sound approach to improving risk management for cultural heritage I and II). These elements include the overall framework of considerations important in each phase of risk management (preparedness, response, recovery) and the principles of risk preparedness, all applied in the context of the forms of cultural heritage being

addressed (objects, buildings, historic towns, cultural landscapes) and the particular nature of the threat causing concern.

- Participants should be asked to recall these “elements of a sound approach” and asked to quickly apply them to their own situation (or a chosen situation). The goal of discussion is primarily to see what participants feel might be the key elements, among those reviewed.
- Candidates for most important “key” element could be:
 - Early “what if?” discussions clarifying policy regarding place of heritage in a place or community, and allocating a voice and role to a designated heritage advocate/ expert

- Adoption of an integrated approach for risk management, integrating concern upfront in all aspects of overall civil defense measures and strategies
 - Efforts to change attitudes among those involved with risk management, to assign high priority to heritage in risk management
 - Preparing a realistic, accessible and well tested emergency response plan with colleagues, residents, users, in a particular context – one which assigns clear priorities (and accompanying directions) for treatment of heritage in emergencies
 - Ensuring that a safe, secure and operational salvage centre of refuge has been organised with adequate space, resources, materials, access to expertise both to store threatened objects/ materials and to treat (at least at the level of first aid) such objects/ materials
 - Efforts at national level to ensure a supportive framework for action at the local level
 - Collection of “best practice” examples of approaches applied to protect important cultural heritage
 - And many others.....
- Many of the points made in discussion can normally be understood as various facets of “integrated approaches”, as above, and the complexity and inter-related nature of integrated approaches should be emphasized
- Some of the guidelines prepared for chapter 10 of Stovel, H.. - “Risk Preparedness: A Management Manual for World Cultural Heritage” could be shown or referenced here as an indication of a short form way to test out all the elements of a “sound approach” in various contexts. The trainer could even use these in the session, asking participants to read and comment on their effectiveness
- Some attention should be given to the elements of an effective risk preparedness strategy at the national level, which, as seen above, may be an outcome of this brainstorming. The section below is devoted to this subject, not yet treated in this module.

2. Improving risk preparedness for cultural heritage at the national level

- One of the most effective ways to improve risk preparedness for cultural heritage at the local or site level is to ensure that a national level framework is in place which can provide adequate conditions for improving risk preparedness for cultural heritage.
- A number of countries have in place civil defense frameworks which include provisions for cultural heritage in civil defense frameworks. These include Holland (as its support for the Hague Convention

demonstrates), Switzerland (Federal Office for Civil Protection), and the USA (FEMA – the Federal Emergency Measures Agency). The ICBS (International Committee of the Blue Shield) network is encouraging similar efforts in a dozen countries around the world.

- Improving conditions at national level may involve all or any of the following:

- Strengthening collaboration between national level emergency response officials and heritage conservation officials. This may involve setting up a high level committee to bring such officials together in a public forum where goals can be established, resources sought, and goals moved towards and pursued.

Canada moved in this direction in the mid 1990s by setting up a “national Summit” meeting on the issue for 80 stakeholders in both the heritage and civil defense fields, which set out a national agenda for change. A summit of this type can be very useful in bringing both fields together to explore each other’s point of view as a first step to articulating integrated policies and strategies.

- Improving the resources available to support risk preparedness for cultural heritage
- Strengthening efforts to improve documentation of cultural heritage in ways which can assist emergency response
- Increasing training opportunities available which bring cultural heritage officials together with emergency response officials, in order to increase the sensitivity of both groups to the concerns, objectives and ways of working of the other.

- An excellent reference to guide officials and professionals in this process of formulating an integrated national framework is the Government of the Netherlands Handbook on Protecting the Cultural Heritage in Emergencies.

3. What can you (the participant) do?

- Each participant is asked what they can do to improve risk preparedness for cultural heritage in their home situation
 - One way to do this is to give participants 5 or 10 minutes to think on their own about a response to this question and then to go around the group, and ask each participant to present their ideas.
 - This should give some confirmation of the use of the ideas in the course, and how these relate to the working context of the participants.

- This also gives the trainer the opportunity to synthesize the results and to highlight common themes in the responses.
- This exercise can be extended by asking the participants to write down what they intend to change when they get home, and by following up at 6 or 12 month intervals (in writing) to ask them what part of their proposed agenda for change they have been able to implement.
- This kind of exercise provides an appropriate way to close the teaching component of the course; it involves participants, gives them something to aim for in leaving, provides a means to keep in touch in future and also provides the trainer a means to summarize key learning messages on the basis of participants' input.

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