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SIXTEENTH SESSION OF THE GENERAL ASSEMBLY OF STATES PARTIES TO THE CONVENTION CONCERNING THE PROTECTION OF THE WORLD CULTURAL AND NATURAL HERITAGE

Paris, UNESCO Headquarters
24 – 25 October 2007

Item 10 of the Provisional Agenda: Policy document on the impact of Climate Change on World Heritage properties

SUMMARY

As per Decision **31 COM 7.1**, paragraphs 4 and 5, this document contains:

I. Background
II. Policy Document on the Impacts of Climate Change on World Heritage Properties
III. Draft Resolution

Based on Document WHC-07/31.COM/7.1, this document, incorporates the views expressed by States Parties during the 31st session of the World Heritage Committee (Christchurch, 2007).

Draft Resolution 16 GA 10, see Point III

I. BACKGROUND

1. The issue of the impacts of climate change on World Heritage natural and cultural properties was brought to the attention of the World Heritage Committee in 2005 by a group of concerned organisations and individuals. The Committee requested (Decision **29 COM 7B.a**) the World Heritage Centre, in collaboration with the Advisory Bodies, interested States Parties and the petitioners, to convene a broad working group of experts to review the nature and scale of the risks arising from climate change and prepare a strategy and report for dealing with the issue. In taking this decision the Committee noted "…that the impacts of climate change are affecting many and are likely to affect many more World Heritage properties, both natural and cultural in the years to come".

2. The group of experts prepared a report on predicting and managing the effects of climate change on World Heritage, as well as a strategy to assist States Parties to the Convention to implement appropriate management responses. The Committee reviewed and endorsed these two documents[1] at its 30th session (Vilnius, 2006), (Decision **30 COM 7.1**) and requested all States Parties to implement the strategy so as to protect the outstanding universal values, integrity and authenticity of the World Heritage properties from the adverse impacts of climate change.

3. The Committee further requested the World Heritage Centre to develop, through a consultative process, a draft policy document on the impacts of Climate Change on World Heritage properties to be presented at the 31st session, and discussed subsequently at the General Assembly of States Parties in 2007. The Committee desired that the draft should include considerations on:

   a) Synergies between conventions on this issue,

   b) Identification of future research needs in this area,

   c) Legal questions on the role of the *World Heritage Convention* with regard to suitable responses to climate change,

   d) Linkages to other UN and international bodies dealing with the issues of climate change,

   e) Alternative mechanisms, other than the List of World Heritage in Danger, to address concerns of international implication, such as climatic change.

4. Accordingly, a Working Group meeting, comprising several experts and representatives of Convention Secretariats, was convened by the World Heritage Centre at UNESCO HQ in Paris on 5- 6 February 2007. This meeting[2] discussed a background document which was assembled by the World Heritage Centre, based on the inputs of various experts, the Advisory Bodies and 20 States Parties. The draft policy document on the impacts of climate change on World Heritage properties was prepared following this meeting and reviewed by various experts, practitioners, as well as representatives of international organisations and the civil society. This draft policy document was discussed at the 31st session of the World Heritage Committee (Christchurch, 2007) and the decision (**31 COM 7.1**) adopted is at Annex 3. The views expressed at the 31st session, have been incorporated into this revised version of the policy document, for consideration and adoption by the General Assembly of States Parties at its 16th session (UNESCO, 2007).

[1] Available at: *http://whc.unesco.org/en/climatechange/* and published as World Heritage Paper No: 22 in English and French.
[2] Full details of this meeting, including the background document and list of participants is available at: *http://whc.unesco.org/en/activities/471/*

II. POLICY DOCUMENT ON THE IMPACTS OF CLIMATE CHANGE ON WORLD HERITAGE PROPERTIES

I. Preamble and Purpose

According to the IPCC[3], the average temperature of the earth's surface has risen by 0.74 degrees C° since the late 1800s[4] and it is projected to increase by another 1.1 to 6.4 degrees C° by the year 2099. The sea level rose on average by 10 to 20 cm during the 20th century, and an additional increase of 0.18 to 0.59 cm is projected by the end of the current century[5]. Small Island Developing States (SIDS) are most vulnerable to such sea level rise and severity of extreme weather conditions and could, in some cases, even become uninhabitable[6]. With the IPCC currently finalising its 4th Assessment Report (Climate Change 2007), it is widely acknowledged that the scientific basis for understanding the impacts of climate change and options for adaptation and mitigation have been clearly established.

The composition and distribution of natural, human and cultural ecosystems are expected to change as species and populations respond to the new conditions created by climate change. Species may be forced to shift their ranges, but this movement becomes difficult or impossible in heavily fragmented landscapes[7]. Climate change exacerbates the incidence of pests, pathogens and fires. Warmer temperatures in deserts could threaten species that now exist near their heat tolerance limit, and desertification will increase. The projected declines in glaciers, permafrost and snow cover will affect soil stability and hydrological systems, eventually causing many river systems to dry up. In coastal and marine ecosystems, an increase coral bleaching and mortality would profoundly affect the productivity of reef ecosystems[8]. Thus, climate change will adversely affect, and indeed is already affecting the conservation of World Heritage natural properties[9] and the ecological systems that sustain life.

World Heritage cultural properties are also being variously impacted by climate change. Archaeological remains and related evidence will be affected when the hydrological, chemical and biological processes of the soil change. Since historic buildings materials are more porous than modern constructions, any increases in soil moisture might result in greater salt mobilisation; consequently drying will cause salt crystallisation to damage decorated surfaces. Timber and other organic building materials may be subject to increased biological infestation in altitudes and latitudes that may not have been previously affected. Flooding may damage building materials not designed to withstand prolonged immersion. Increases in storminess and wind gusts can lead to structural damage. Desertification, salt weathering and erosion is already threatening cultural heritage in desert areas. Climate change may also cause social and cultural impacts, with communities changing the way they live, work, worship and socialise in buildings sites and landscapes, possibly migrating and abandoning their built heritage. Further, climate change may also cause impacts on livelihoods, food security, and the social fabric as a whole.

Deeply concerned about the adverse impacts which climate change is having or may have on the Outstanding Universal Value (OUV), integrity and authenticity of World Heritage

[3] Intergovernmental Panel on Climate Change – "IPCC 4th Assessment Report: Summary for Policymakers".
[4] The 2007 IPCC update of the range of projected temperature change is 1.8 to 4°C – www.ipcc.ch.
[5] IPCC - Climate Change 2007: The Physical Science Basis, Summary for Policy Makers. It is estimated that, depending on the emission scenario, sea level rise could reach [0.18 – 0.38] to [0.26 – 0.59] m on average for 2090-2099 compared to 1980-1999.
[6] UNFCCC (2005), Climate Change, Small Island Developing States (SIDS). Issued by the Climate Change Secretariat (UNFCCC), Bonn, Germany.
[7] Hotspots Revisited: Earth's biologically richest and most endangered terrestrial ecoregions, Russel A. Mittermeier et al. 2004, CEMEX, S. A. de C. V.
[8] Climate Change and Biodiversity, 2002, Intergovernmental Panel on Climate Change (IPCC) Technical Paper V.
[9] *WHC-05/29.COM/7B.Rev*, State of conservation reports of properties inscribed on the World Heritage list, UNESCO 2005.

properties, the World Heritage Committee launched an initiative at its 29th session (Durban 2005) to investigate the issue in detail. The resulting report on "*Predicting and Managing the effects of Climate Change on World Heritage*", as well as a "*Strategy to assist States Parties to Implement Appropriate Management Responses*" were considered and endorsed by the Committee at its 30th session (Vilnius, 2006)[10]. These two documents present a detailed analysis of the threats posed to both natural and cultural World Heritage properties by climate change and discuss some of the preventive and corrective actions that are possible, as well as actions relating to the sharing of information and knowledge.

Mindful of the various issues already covered in detail in the above-mentioned report and strategy, this policy document is principally aimed at providing the World Heritage decision / policy-makers with guidance on a limited number of key issues (synergies, research needs and legal issues). For all other general issues dealing with the impacts of climate change on World Heritage properties and management responses document *WHC-06/30.COM/7.1* (World Heritage Paper No: 22) should be consulted.

The following definitions will be used throughout this policy document:

Climate change:	*a change in 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* (UNFCCC).
Adaptation:	*the adjustment in natural or human systems, in response to actual or expected climatic stimuli or their effects that moderate harm or exploits beneficial opportunities* (IPCC).
Mitigation:	*an anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases* (IPCC).

II. Synergies with other International Conventions and Organizations

A. Global level

Actions by the World Heritage Centre and the Advisory Bodies related to climate change will seek to take advantage of synergies to better coordinate and enhance effective implementation of the *World Heritage Convention* by capitalising upon each organization's strengths, and aiming to avoid overlap and duplication with, and respect the individual mandates of, other international organisations and mechanisms.

The World Heritage Centre and the Advisory Bodies will facilitate knowledge creation through networking for research, information sharing, exchange of best practice, education and training, awareness raising, and capacity building between the *World Heritage Convention* and other Conventions, international bodies, universities, research institutions, the private sector, NGOs, and other relevant programmes working on climate change issues.

The World Heritage Centre will strengthen its relationship with the UNFCCC and IPCC Secretariats, which are the key international organisations working on climate change, and explore how the Biodiversity Liaison Group[11] can best assist in developing synergies, and explore existing processes in other Conventions, including the UN Convention to Combat

[10] Document *WHC-06/30.COM/7.1* and published as World Heritage Paper N° 22.

[11] Comprising the Heads of the Secretariat for the Convention on Biological Diversity (CBD), the Ramsar Convention, the Convention on Migratory Species (CMS), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the World Heritage Convention and the International Treaty on Plant Genetic Resources (ITPGR).

Desertification (UNCCD) and other UNESCO initiatives, such as the Man and the Biosphere Programme (MAB).

The *World Heritage Convention*'s comparative advantage lies in its management of outstanding cultural and natural heritage properties around the world, and the breadth of States Parties' obligations to protect these properties. Actions taken at these iconic properties attract considerable attention and can influence the adoption of good management practices elsewhere. Therefore, the World Heritage Centre will focus its efforts on optimizing this comparative advantage by actively promoting, in cooperation with States Parties, the use of World Heritage properties in the activities of other Conventions, international bodies and programmes working on climate change. Priority in all climate change related actions under the *Convention* will be given to properties in Africa and Small Island Developing States (SIDS).

Recognising the overarching objective of safeguarding the outstanding universal values of World Heritage properties World Heritage properties can serve as laboratories where monitoring, mitigation and adaptation processes can be applied, tested and improved. They can partner with relevant organizations in field activities on mitigation and adaptation strategies, methodologies, tools and/or pilot projects. The World Heritage Centre and the Advisory Bodies will lead and coordinate in the collection and wide dissemination of lessons learned and best practice developed through such partnerships.

The World Heritage Centre and the Advisory Bodies will cooperate with States Parties and other relevant organizations during the reactive monitoring and periodic reporting processes, and in research activities, so that the impacts of, adaptation to, and mitigation of climate change are properly assessed, reported and managed. The use of the UNFCCC Compendium on methods and tools to evaluate impacts of, vulnerability and adaptation to, climate change will be promoted.

B. States Parties level

States Parties to the *World Heritage Convention* need not rely solely on the *World Heritage Convention* process to integrate their approaches to World Heritage and climate change. They will work with the climate change policy and decision-makers within their own countries as the primary response to the challenges that climate change poses for World Heritage.

States Parties and managers of individual World Heritage properties will consider undertaking site-level monitoring, mitigation and adaptation measures, where appropriate. Some properties may be able to be involved in sequestration and carbon offset activities as part of broader national mitigation approaches and this will be the primary level of focus. They will also integrate these actions in risk preparedness policies and action plans, making use of the "Strategy for Risk Reduction at World Heritage Properties"[12].

States Parties may use the opportunities presented by the "Nairobi Work Programme on Impacts, Vulnerability, and Adaptation to Climate Change"[13] under the UNFCCC, and other ongoing processes, to address adaptation to climate change at World Heritage properties. They are encouraged to participate in the United Nations Climate Change conferences with a view to achieving a comprehensive post-Kyoto agreement.

States Parties work at the national level, but will also establish appropriate thematic, regional and global linkages and cooperation to understand, access, fund and implement mitigation

[12] Document WHC-07/31.COM/7.2

[13] *http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/nwp_en_070523.pdf*

and adaptation strategies, actions, tools and/or pilot projects. Efforts at World Heritage property level to mitigate and adapt to climate change will be coordinated with other Conventions and international bodies working on climate change, to create synergies, integrate activities and avoid duplication.

States Parties and managers of individual World Heritage properties will include climate change messages in communication, education and interpretation activities as appropriate, to build public awareness and knowledge of climate change, its potential impacts on World Heritage properties and their values, and the ongoing activities or available options for adaptation and mitigation.

III. Research Needs

A. Key Challenges

There is presently a lack of data that is specifically relevant to understanding climate change impacts on World Heritage properties, particularly cultural properties. This situation is further compounded by a lack of adequate capacity and financial resources for research and its application, especially in developing countries, to understand and address climate-related issues. Such lack of knowledge and capacity makes it difficult to assess the loss of key values of World Heritage properties as a consequence of climate change. Addressing these gaps in knowledge, information and capacity, and performing vulnerability assessments will assist in determining priorities for management action.

B. Principles

Research on climate change at World Heritage properties will be carried out through partnerships with and influence of those who are conducting or can carry out such research or who fund research programmes. The site-specific nature of the climate change problems facing properties, make them ideal as laboratories for long-term climate change impact monitoring and testing of innovative adaptation solutions.

Considerable research is currently underway on the impacts of climate change, particularly in relation to natural ecosystems. However, much of this research is not focused on World Heritage properties and thus, links will be established with relevant organizations to ensure that ongoing generic research on climate change incorporates the effects of climate change on World Heritage properties.

Research will also be used as a means for capacity building among site managers and to raise awareness among the public which, in turn, may help build public and political support. Involving properties in research relating to climate change will also enable them to identify specific research needs and better apply research results to assist the management of the properties.

Research must draw wider conclusions or develop approaches (such as management frameworks) that enable knowledge transfer to take place among properties and regions. For example, the approach taken by the EU 6th Framework Programme research project on Global Climate Change Impacts on the Built Heritage and Cultural Landscapes[14] in producing a Climate Change Vulnerability Atlas and in developing drying strategies for different types of historic structures for the European Region can be a model for other regions of the world.

[14] http://noahsark.isac.cnr.it/

C. Specific research priorities

World Heritage site managers and researchers will continue to better develop their use of both traditional and advanced technologies in order to increase baseline data, including data on climate variables for each property or network of representative properties. This will necessitate the gathering of climate data sets and climate projections from various models for different regions/properties. This will better enable understanding of the links between climate change and local impacts, including the relevance of particular environmental variables to different properties.

Three different strands of research needs have been identified:

1. Research that responds to increased risk factors such as fire, drought, floods, avalanches, glacial lake outbursts to support disaster management plans for properties.
2. Socio-economic research, such as cost-benefit analysis, valuing the economic losses from climate change and contingent valuation, as well as research into the impacts of climate change on societies, particularly traditional ones or in sites such as cultural landscapes where the way of life contributes to the OUV.
3. Research into the nature and sources of other stress factors (e.g. pollution, sedimentation, deforestation, poaching) impacting on properties, which can greatly reduce their resilience to the impacts of climate change.

These provide the foundation for capacity building for adaptive management among site managers and will receive high priority. In addition, specific research priorities for natural and cultural properties are detailed in the Annex 1 and States Parties will work with appropriate partners to support and fund these research needs.

D. Advocacy and implementation

Research in relation to the impacts of climate change on World Heritage properties will be linked to a clear course of follow-up action, including awareness raising. In particular the following will be ensured:

1. Research results will be translated into practical tools that can assist managers in developing their adaptive management responses. Options for the creation of a clearing-house mechanism of best-practice case studies on climate change, either separately or linked to similar mechanisms, such as those under the UNFCCC, CBD, UNCCD, or CMS will be investigated.
2. Problems being experienced by managers will be clearly translated into research questions to ensure that gaps in knowledge are identified and are used to inform the development of relevant research programmes and translation of such research into useful guidelines and protocols for best practice.
3. The World Heritage Committee will influence and inform international research programmes of the information needs of World Heritage properties. The World Heritage Centre and Advisory Bodies will work with and seek to influence organisations that fund research to invest in research relating to climate change impacts on World Heritage properties.

IV. Legal Questions and Alternative Mechanisms

Legal questions on the role of the *World Heritage Convention* with regard to suitable responses to climate change, and alternative mechanisms, other than the List of World

Heritage in Danger, are addressed in the following paragraphs through a critical analysis of the existing provisions of the *Convention* and its *Operational Guidelines*. Additionally some specific legal questions are dealt with in Annex 2, which can provide further guidance on this subject.

A. Duties and obligations of States Parties under the *Convention*

Article 4 is a central provision of the *Convention*:

> Each State Party to this *Convention* recognizes that the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage referred to in Articles 1 and 2 and situated on its territory, belongs primarily to that State. *It will do all it can to this end, to the utmost of its own resources and, where appropriate, with any international assistance and co-operation, in particular, financial, artistic, scientific and technical*, which it may be able to obtain. (Emphasis added)

In the context of climate change, this provision will be the basis for States to ensure that they are doing all that they can to address the causes and impacts of climate change, in relation to the potential and identified effects of climate change (and other threats) on World Heritage properties situated on their territories.

In addition to the duty set out in Article 4, Article 5 places a number of obligations on States Parties:

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

B. Article 6 of the *World Heritage Convention*

Under Article 6, "…the States Parties to this *Convention* recognize that [such heritage] constitutes a world heritage for whose protection it is the duty of the international community as a whole to co-operate". Under Article 6(3), States Parties undertake "not to take any deliberate measures which might damage directly or indirectly the cultural and natural heritage".

Part of that international cooperation in the context of climate change will include a collaborative approach to assess and address the causes and effects of climate change on World Heritage properties.

C. Revisions to the *Convention*'s *Operational Guidelines*

Having regard to the duties and obligations of States Parties found in the *Convention*,[15] the World Heritage Committee will specifically consider taking climate change into account in the next revision cycle of the *Operational Guidelines* to the *Convention*.

[15] Specifically Articles 4, 5, 6, 7 and 11 and the obligations of States Parties for reporting and monitoring under Article 29.

C.1. Preparation of nominations

- Para 132.1: Identification of the property: the need to adapt boundaries will be one of the more significant implications of climate change if OUV is to be maintained in the future. In many cases larger or altered areas will be required, necessitating boundary modification or enlargement.
- Para 132.2: Description of the property: the description of the history and development of the property can be required to include the history of threats to the property; threats arising from the effects of climate change will be particularly noted.
- Para 132.4: State of conservation and factors affecting the property: when adverse effects resulting from climate change are evident, climate change will be included as a threat in the description of factors affecting the property, and it will be used as a baseline to monitor the state of conservation of the property in the future.
- Para 132.5: Protection and management: relevant provisions will be considered to incorporate climate change concerns in the planning and management requirements to ensure adequacy of adaptation and mitigation measures at the site level.

C.2. Monitoring

Part IV.A: Reactive monitoring

Given that climate change effects are relevant to a wide range of both natural and cultural properties, the World Heritage Committee will consider that the reactive monitoring provisions are made more specific as a basis for monitoring of and reporting on the site-specific effects of climate change on World Heritage properties, particularly in the following paragraphs:

- Para 173 (a) relating to indications of threats or significant improvement;
- Para 173 (c) relating to information on any threat or damage to or loss of outstanding universal value, integrity and/authenticity.
- Paras 175 and 176 relating to reactive monitoring; in the context of necessary restoration measures to maintain its OUV these will include measures to adapt to the effects of climate change, as well as measures to mitigate those effects, at least at the site level.

Part IV. B: The List of World Heritage in Danger

While the enumeration of "serious and specific dangers" under Article 11 (4) of the *Convention* does not specifically refer to climate change (which was not in serious contemplation in the early 1970s), the language is clearly sufficiently broad to include its effects.

The *Operational Guidelines*, in Paras 179 and 180, set out the criteria for placing cultural and natural properties on the "In-Danger" list for both ascertained and potential dangers. Para 181 provides that the "factor or factors which are threatening the integrity of the property must be those which are amenable to correction by human action".

Currently, only Para 179 (b) makes reference to "climatic or other environmental factors" as a potential danger, but only in respect of cultural properties. Hence, these provisions will be clarified to include specific reference to the effects of climate change, particularly focusing on possible adaptation measures at site level, but also recognizing that the causes of climate

change “are amenable to correction by human action” by the global community of States Parties.

C.3. Periodic reporting

Under paragraph 199 of the *Operational Guidelines*, States Parties are requested to submit reports on legislative and administrative provisions adopted concerning the application of the *Convention*, including the state of conservation of their World Heritage properties. The World Heritage Committee will consider a specific obligation for States to report on the climate change related threats and impacts to OUV, and the efforts being made by way of mitigation and adaptation measures to address them.

C.4. Management planning and management systems

Sub-paragraph 5 of para 132 requires the inclusion of a management plan in the nomination submission process, and Para 118 contemplates the inclusion of risk preparedness as an element in World Heritage properties management plans and training strategies. The World Heritage Committee will consider strengthening the management planning and management system provisions of the *Operational Guidelines* concerning site level adaptation and mitigation measures.

D. Criteria for identifying World Heritage properties most affected by climate change

The World Heritage Committee and the Advisory Bodies will develop, in consultation with States Parties, criteria for identifying those properties which are most threatened by climate change. The identification of such properties was contemplated in Decision **29COM 7B.a** (Durban, 2005), as well as in Decision **30 COM 7.1** (Vilnius, 2006) wherein the World Heritage Committee also urged that pilot projects be implemented at specific World Heritage properties.

These criteria will be used not only while considering the inclusion of properties on the List of World Heritage in Danger, but will also form the basis for prioritising vulnerability assessment, mitigation and adaptation activities. The need for incorporating these criteria into the *Operational Guidelines* will be considered only after assessing their utility for this purpose.

E. The Precautionary approach in World Heritage Decision-making in the context of Climate Change

Given the increasing application of the precautionary approach in international law and policy[16], the World Heritage Committee will consider specifically incorporating reference to it within the *Operational Guidelines*. The fact that the approach has been adopted in the UNFCCC provides a useful example, and its application to protection and conservation concerning World Heritage is obvious. The UNFCCC includes this under Article 3 (Principles) as follows:

> “The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant

[16] See for example 1992 Rio Declaration on Environment and Development Principle15.

sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties."[17]

The explicit adoption of the precautionary approach by the World Heritage Committee as a consideration in decision making in general will encourage States Parties and the Advisory Bodies to use the emerging knowledge relating to the implementation of the precautionary approach[18] to deal more actively with risk and uncertainty when making decisions concerning the effects of climate change on World Heritage properties.

V. Mitigation of Emissions by the World Heritage Community

While the main focus of the response strategy under the *World Heritage Convention* will be on site level adaptation, several activities under the *Convention* and by the World Heritage community result in the emission of greenhouse gases. Therefore, mitigation options will be explored and actions taken for reducing and/or offsetting these emissions (e.g. as done in the case of Yosemite National Park, California, USA), and these practices will be publicised. The network of World Heritage cities offers an unparalleled opportunity to promote and highlight the use of energy efficient and carbon neutral technologies.

Mitigation measures will also include the following: a recycling program at the World Heritage Centre with progressive, phased targets; progressively increasing use of web- and video-conferencing technologies in order to obviate the need to undertake travel; progressively decreasing paper usage at Committee meetings by encouraging the dissemination and utilization of electronic documents; progressively decreasing the number of air trips on Committee business; measures to ensure that meetings will be carbon-neutral (e.g. Christchurch, 2007); and where airline flights are necessary and unavoidable, the purchasing of carbon offsets from a Gold Standard, including providing meeting budgets with financing for such offsets.

VI. Conclusions

The following key principles emerge from this policy document:

i. In addressing the impacts of climate change on the outstanding universal value, integrity and authenticity of World Heritage properties, the World Heritage community will work in cooperation with other partners that also have responsibility, resources and expertise related to this challenge.

ii. The World Heritage Committee will be an advocate for relevant climate change research, and work to influence and support partners that are mandated and resourced to carry out such research.

iii. World Heritage properties will be used wherever appropriate and possible as a means to raise awareness about the impacts of climate change upon World Heritage to act as a catalyst in the international debate and obtain support for policies to mitigate climate change, and to communicate best practices in vulnerability assessments, adaptation strategies, mitigation opportunities, and pilot projects.

[17] 1992 Framework Convention on Climate Change Article 3 (3).

[18] See Trouwborst, A. Evolution and Status of the Precautionary approach in International Law, Kluwer 2001; de Sadeleer, Nicolas. Environmental Principles – From Political Slogans to Legal Rules. Oxford; Cooney, R. and Dickson, B. Biodiversity and the Precautionary approach: Risk and Uncertainty in Conservation and Sustainable Use, Earthscan 2006.

iv. Climate change will be considered in all aspects of nominating, managing, monitoring and reporting on the status of these properties.

v. In considering the threat posed by climate change to the OUV, authenticity and/or integrity of a World Heritage property, the World Heritage Committee will use the existing tools (e.g. List of World Heritage in Danger) and processes (e.g. Reactive Monitoring, Periodic Reporting) of the *Convention* and its *Operational Guidelines*. When the *Operational Guidelines* are revised, the Committee will consider whether specific references to climate change need to be included.

Annex 1

Specific Research Priorities

Natural Heritage

In order to set priorities for a management response to climate change, the following research is particularly required in relation to natural World Heritage properties:

1. General:

- To identify Natural World Heritage properties most at risk from the impacts of climate change to enable a clearer identification of priorities for overall response actions to avoid or alleviate impacts.
- To identify the most suitable monitoring and evaluation systems to enable the most effective detection of climate change and its impacts at natural properties to project how these impacts will threaten World Heritage values over time and space.

2. Research in relation to criterion (vii) “beauty”:

- To identify how climate change affects aesthetic and scenic values, e.g. of waterfalls and wetlands, through changes in extreme weather events, fire and water regimes, vegetation and other landscape scale patterns and processes. Also to identify how climate change can affect superlative natural phenomena such as wildlife migrations and concentrations through seasonal changes in climate parameters, fire and water regimes, food availability and nutrient cycles.

3. Research in relation to impacts on criterion (viii) “geodiversity”:

- To identify the potential direct and indirect impacts of climate change on fossil, geological and geomorphologic values, e.g. from sea level rise and changes in extreme weather events, fire and water regimes (e.g. important for caves), weathering and erosion (e.g. important for fossils).

4. Research in relation to impacts on criteria (ix) and (x) “biodiversity”:

- To identify species and ecosystems within properties which are most threatened by climate change (e.g. species with limited altitudinal range, coral reefs, and glaciers).
- To identify the climate sensitivity of species and ecosystems to provide a greater indication of those values which are most susceptible to climate change (such as from fire, invasive species, drought, etc) and also to identify how much climate change (direction, magnitude, rate, means vs. extremes) is too much in relation to specific values. Understanding the climatic thresholds of key species and communities is essential for planning effective management responses.
- To identify “climate refugia” for biodiversity values inside and outside properties. Since ongoing evolutionary processes are a value, it is important to have some idea where ecosystems are most likely to be able to adapt to climate change without significant loss of their functions, components and structures.
- To identify criterion (ix) and (x) properties most at risk, as well as means to avoid or alleviate impacts.

5. Research in relation to impacts on integrity (size, shape, boundaries, buffer zones, management, threats, etc.):

- To identify key direct and indirect impacts of climate change on the integrity of specific properties and how this research can best be used to guide field management responses at the site level.
- To identify the most effective means to build connectivity between properties and surrounding landscapes (for example through habitat corridors and buffer zones) to promote resilience of species and communities.

6. Other research in relation to natural World Heritage properties:

- To identify how properties contribute to greenhouse gas emissions, sequestration and storage. This could assist in recognizing carbon values of forest and other properties to increase leverage for conservation and potential for sustainable financing through carbon offset projects.

Cultural Heritage

The following research in the cultural heritage area is needed in order to enable priority setting for a management response to climate change:

- Understanding the vulnerability of materials (indoor, outdoor, buried) to climate variables (for example, particularly too much or little moisture effects).
- Understanding how traditional materials and practices need to adapt to extreme weather events and a changing climate.
- Development of fail-safe methods and technologies for monitoring the impact of climate change at properties.
- Understanding climate change impacts causing changes in society i.e. movement of peoples, displacement of communities, their practices, livelihoods, and their relation with their heritage.

    - Future research needs in the area of climate change and cultural World Heritage are clustered under the following 5 themes. Understanding materials vulnerability
    - Monitoring change
    - Modelling and projecting climate behaviour
    - Managing cultural heritage
    - Preventing damage

Research needs have been identified from public statements, scientists, heritage managers and decision-makers. While these have a bias to the European region where two scientific research projects on climate change impacts on cultural heritage, *Engineering Historic Futures (UK)* and *Global Climate Change Impact on Built Heritage and Cultural Landscape (EU)*, have taken place, the priorities are relevant also to World Heritage.

1. Understanding Materials Vulnerability:

The environment-materials interface is an area in critical need of research. Key aspects relate to the effects of too much or too little moisture and temperature changes and how change mechanisms such as salt crystallization in materials and biological changes on the surface of materials are amplified. Scientific research on the impact of extreme weather (including rain penetration, high summer temperatures and chloride loading) on traditional materials and practices is needed in order to provide justification for changing a way of life that may no longer be sustainable. Cross field monitoring should be used to develop key indicators of impact in terms of scale, time and design. Individual properties and buildings need to be studied for better understanding of which surfaces of a monument are more

vulnerable, to develop knowledge on the behaviour of materials and to respond to indoor environmental changes as a function of external climate.

2. Monitoring change:

It is important to recognize that a large amount of data and tools are already available in complementary fields for cultural heritage, for example in geo-archaeology and in microbiology. This research needs to be built upon, though clearly specific research is needed because of the general lack of research in climate change impacts and cultural heritage. There are also currently no standards, protocols, indicators and databases within the field of cultural heritage and climate change. This suggests that research needs to focus in two directions: on the impact of climate change on local scales, especially in cities, where there are concentrations of people and cultural heritage; and in the development of new technological tools – advanced yet simple to use on site, to enable monitoring of change and to validate conservation decisions. While sensors need to be both inexpensive and sturdy, it is important that much progress is made in technology development, with a focus on remote sensing products such as gas phase bio-sensing. This will enable the small group of scientists working in this field to provide remote support to site managers who are prioritising the managed change of cultural heritage.

3. Modelling and projecting climate behaviour:

Research concerning climate change and cultural heritage, even at a European level is in a nascent stage. This has concentrated on broad regional climate change impacts and not on the impact on individual buildings and ensembles. It is necessary to assign probabilities of damage to specific properties, but this requires ensembles of climate models to be used and for research to be carried out on sub-grid climate models. This approach would have a much better spatial resolution than the current 50km grid. State-of-the-art computer simulation must be used if site managers are to understand better the potentially catastrophic effect on properties of sporadic and extreme events and to use risk management to forecast the effect of natural disasters on specific WH properties. Research on disaster preparedness must therefore focus on hazard recognition and the quantification and prioritization of climate change risks.

4. Managing Cultural Heritage:

There are three broad categories of the cultural heritage climatic environment: outdoor, indoor and buried. The advantage of using these categories is that they guard against the assumption that one technical solution is universally applicable. It is useful to encourage the public to consider the value of cultural and natural properties at the same time, as integral to each other and to the quality of life. Developing mutual dependence where appropriate will allow relevant scientific data to be shared among scientists and managers of both categories of properties, since it is not possible to wait for all the research to be done for management changes to take place in response to climate change. The development of synergies and cooperation is vital in this complex field.

5. Preventing Damage:

All cultural heritage must be considered completely vulnerable to severe natural disasters and to phenomena associated with climate change. While it is not possible to prevent damage all of the time, research is imperative if damage is to be avoided at least some of the time.

Annex 2

Consideration of some Specific Legal Questions

1. *Should a site be inscribed on the World Heritage List while knowing that its potential OUV may disappear due to climate change impacts?*

Often properties are listed for more than one criterion. If one or more of the values disappears, the Advisory Bodies and the World Heritage Centre would make an assessment, and if necessary, a mission conducted and a report submitted. Modifications to the boundaries and the criteria, if necessary, could take place under Paras 163 to 165 of the *Operational Guidelines*. If the criteria are to be altered, a re-nomination process would need to take place pursuant to Para 166. If their OUV disappears altogether, then delisting can take place, as contemplated by the *Operational Guidelines* under paras 192 to 198.

2. *Should a site be inscribed on the List of World Heritage in Danger or deleted from the WH List due to impacts beyond control of the concerned State Party [in circumstances where these impacts have resulted in serious deterioration of or loss of OUV]?*

Inclusion on the List of World Heritage in Danger under Article 11(2) is dependent on the threats to OUV. Where the threat comes from is irrelevant. In these circumstances, a site can be inscribed on the In-Danger list even where the impacts are beyond the control of the State Party concerned. The World Heritage Committee has requested[19] that specific criteria be developed for the inclusion of those properties which are most threatened by climate change on the List of World Heritage in Danger. Similar considerations apply in relation to potential delisting.

3. *Should the* Convention*, and its associated* Operational Guidelines*, seriously consider the fact that for some natural properties it will be impossible to maintain the "original" OUVs for which it was originally inscribed on the World Heritage List, even if effective adaptation and mitigation strategies are applied, therefore requiring an "evolving" assessment of OUV?*

OUVs are regularly assessed through the monitoring and reporting process. Para 181 contemplates corrective administrative or legislative action such as the cancelling of a major public works project or the improvement of legal status of a property. Thus if OUVs have fluctuated or changed, it will be a matter for professional judgment by the Advisory Bodies and the judgment of the World Heritage Committee as to whether a re-nomination process under Para 166 should proceed.

[19] Decision **31 COM 7.1**, paragraph 14.

Annex 3

ISSUES RELATED TO THE STATE OF CONSERVATION OF WORLD HERITAGE PROPERTIES: THE IMPACTS OF CLIMATE CHANGE ON WORLD HERITAGE PROPERTIES

Decision: 31 COM 7.1

The World Heritage Committee,

1. *Having examined Document WHC-07/31.COM/7.1,*

2. *Recalling Decision **30 COM 7.1** adopted at its 30th session (Vilnius, 2006),*

3. *Thanks the Government of the Netherlands for having funded the development of the policy document on the Impacts of Climate Change on World Heritage Properties, including a meeting of the Working Group of Experts, (5 - 6 February 2007 at UNESCO Headquarters, Paris), and also thanks the experts and representatives of organisations who contributed to the meeting;*

4. *Endorses the "Policy Document on the Impacts of Climate Change on World Heritage Properties" as described in Document WHC-07/31.COM/7.1, and decides to authorize the Chairperson of the Committee to vet the Policy Document, incorporating views expressed at the 31st session, and, as appropriate, to consult Committee members by email and other means;*

5. *Decides to transmit the revised Policy Document for discussion and adoption at the 16th General Assembly of States Parties in 2007;*

6. *Recommends that the Policy Document be read in conjunction with the report on "Predicting and managing the impacts of Climate Change on World Heritage" and the "Strategy to assist States Parties to implement appropriate management responses" - endorsed by the Committee at its 30th session (Vilnius, 2006) – together with other relevant conventions such as the Convention on Biological Diversity and the Convention to Combat Desertification, and other UNESCO initiatives, and further thanks the Government of Spain for supporting their publication as World Heritage Paper No. 22;*

7. *Urges the World Heritage community to integrate actions pertaining to climate change in risk preparedness policies and action plans, making use thereby of the Policy Document and the Strategy for Risk Reduction at World Heritage properties, so as to protect their outstanding universal value, authenticity and/or integrity.*

8. *Also urges States Parties to participate in the United Nations Climate Change conferences with a view to achieving a comprehensive post-Kyoto agreement, and to fund and support the research needs as identified in Annex 1 of the Policy Document;*

9. *Encourages the World Heritage Centre to sensitize States Parties, as appropriate, to the need to establish inter-disciplinary mechanisms to deal with policy and governance issues relating to the effect of climate change on World Heritage properties;*

10. *Recommends that the World Heritage Centre strengthen its relations with all organizations working on climate change, particularly with the UNFCCC and IPCC secretariats, and specifically with regard to the effect of climate change on World Heritage properties;*

11. *Welcomes the excellent publication on "Case Studies on Climate Change and World Heritage" and thanks the United Nations Foundation (UNF) and the Government of the United Kingdom for having supported its production;*

12. *Encourages UNESCO and the Advisory Bodies to disseminate widely the Policy Document, and other related publications through appropriate means to the World Heritage community and the broader public, and promote their application;*

13. *Adopts the specific research priorities indicated in the Policy Document and recommends to the UNESCO Forum – Universities and Heritage to prioritize these subjects and to open discussions on the effects of climate change on World Heritage properties;*

14. *Requests the World Heritage Centre and the Advisory Bodies to develop in consultation with States Parties criteria for the inclusion of those properties which are most threatened by climate change on the List of World Heritage in Danger, for use in prioritizing vulnerability assessment, mitigation and adaptation activities;*

15. *Decides, for future sessions of the World Heritage Committee, to add to the working document on State of Conservation reporting, a section on those properties most affected by climate change;*

16. *Commends the Government of New Zealand for making the 31st session "carbon neutral" and adopts a carbon neutral policy for all future sessions, to the extent feasible.*

III. ***Draft Resolution***

The General Assembly,

1. *Having examined Document WHC-07/16.GA/10,*

2. *Adopts the "Policy Document on the Impacts of Climate Change on World Heritage Properties" and strongly recommends its use by all concerned, together with the report on "Predicting and managing the impacts of Climate change on World Heritage" and the "Strategy to assist States Parties to implement appropriate management responses" contained in World Heritage Paper No: 22;*

3. *Encourages UNESCO and the Advisory Bodies to disseminate widely the Policy Document, the Report and Strategy, referred to in paragraph 2 above, and other relevant publications to all concerned, including the general public, and promote their application; and*

4. *Requests the World Heritage Committee to institute a mechanism for the World Heritage Centre and the Advisory Bodies to periodically review and update the Policy Document, and other related documents, so as to make available the most current knowledge and technology on the subject to guide the decisions and actions of the World Heritage community.*