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MANAGING CLIMATE CHANGE RISKS TO WORLD HERITAGE USING THE IN DANGER LIST

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INTRODUCTION

2022 marks the 50th anniversary of the Convention Concerning the Protection of the World Cultural and Natural Heritage (hereafter, the World Heritage Convention). This year is a time to celebrate achievements and reflect on the success of the Convention's goals and the challenges that lie ahead. Of the many challenges, climate change has become "the most prevalent threat" to natural World Heritage sites and the greatest future threat (Osipova et al. 2020). Climate change is also recognized as an increasing threat to cultural heritage (Cazenave 2014; Marzeion and Levermann 2014).

This Discussion Paper considers how the World Heritage Convention's 'List of World Heritage in Danger' could be used more effectively for managing sites threatened by climate change or where climate change has already caused significant degradation. The purpose of the paper is to stimulate ideas and discussion to help further develop and finalise the draft Policy Document on climate action for World Heritage which is due to be adopted by the General Assembly of State Parties to the Convention in 2023.

We begin with a brief overview of the World Heritage Convention, and the increasingly damaging impacts of climate change to properties inscribed on the World Heritage List, particularly to climate sensitive-sites comprising coral reefs and glaciers. We then discuss the development of UNESCO's climate change policy document.

We use Australia's Great Barrier Reef (GBR) - one of the world's most iconic World Heritage sites and the world's largest coral reef system – as a case study to explore the implications of inscribing a site on the List of World Heritage in Danger partly or primarily due to climate change impacts. We draw upon this case study to propose a set of measures to protect World Heritage against growing climate risks.

The World Heritage Committee inscribes a site on the List of World Heritage in Danger (hereinafter, the In Danger List) when it finds a site is threatened by a serious and specific danger. Many State Parties to the Convention tend to be resistant to having their own properties inscribed on the In Danger List because of a perception that inscription is a penalty or sanction, even though the intended purpose of the In Danger List is to help protect threatened sites (Badman et al. 2009). This resistance may be heightened when the primary reason for inscribing a site on the In Danger List is human-influenced climate change, given there are conflicting national interests between protecting World Heritage and promoting the extraction, use and export of fossil fuels. Concerns about climate change and the In Danger List therefore have created friction in the operations of the Convention.

In 2021, after three mass coral bleaching events in the GBR over the last six years and continued ecosystem degradation due to poor water quality, the World Heritage Committee was presented with a draft decision to inscribe the property on the In Danger List. In response, Australia's Minister for the Environment stated that her government has fulfilled or is meeting all Committee recommendations, drawing attention to the Reef 2050 Plan and the AU$3 billion in funding to address water quality issues and other identified threats, and support research aimed at increasing the reef's adaptation and resilience. The Minister also argued that Australia is helping reduce greenhouse gas emissions through implementing its Paris Agreement contributions. In conclusion, she argued that "The draft decision to immediately in danger list the Reef before the Committee has finalized its climate policy makes no sense" and urged for a final climate policy that would provide a consistent framework for addressing the impact of climate change on all World Heritage properties. At its 44th session, the World Heritage Committee decided against immediately adding the GBR to the In Danger List (UNESCO 2021).

Adding sites to the In Danger List partly or primarily due to climate change impacts will likely continue to be contentious unless a more structured pathway is identified. This paper proposes a way forward that addresses current barriers and utilises existing mechanisms within the World Heritage governance system.

BACKGROUND TO WORLD HERITAGE

The World Heritage Convention, established in 1972, has a globally significant mission. It aims to identify, protect, conserve, present and transmit to future generations cultural and natural heritage of Outstanding Universal Value. It is the only international convention to protect nature and culture by linking them through the concept of heritage. More than one thousand properties have been inscribed on the World Heritage List, including world-renowned sites such as the Serengeti, Machu Picchu and the Taj Mahal. Approximately one third of the sites on the List are natural, almost all the remaining are cultural, and a small number are mixed natural/cultural sites.

Article 4 of the World Heritage Convention includes an obligation by each State Party to "do all it can … to the utmost of its own resources" to protect, conserve, present and transmit to future generations World Heritage listed sites within its own territory. Article 6(1) notes that States Parties recognize that the cultural and natural heritage within their territory constitutes a world heritage, whose protection is the duty of the international community as a whole. Furthermore, Article 6(3) creates an obligation not to interfere with the protection of World Heritage sites in other countries: "Each State Party to

this Convention undertakes not to take any deliberate measures which might damage directly or indirectly the cultural and natural heritage … situated on the territory of other State Parties to this Convention."

The Convention and Operational Guidelines recognize that the State Party in whose territory a listed site is situated will not always be able, on its own, to stem the tide of heritage degradation and destruction, and that international intervention in the form of financial or other assistance will be needed. Indeed, the Convention came into being precisely because of growing global concern that a multilateral mechanism that enables cooperation between individual State Parties was needed to prevent the further erosion of the world's natural and cultural heritage. The Guidelines are regularly revised by the World Heritage Committee to reflect new concepts, knowledge or experiences.

To be inscribed on the List, a site must have Outstanding Universal Value (OUV) by: (i) meeting at least one of ten selection criteria in the Operational Guidelines of the Convention; (ii) at the time of inscription, meeting the conditions of integrity and/or authenticity; and (iii) having an adequate system of protection and management in place. The Operational Guidelines also provide for the inscription of sites on the List of World Heritage in Danger if they are threatened by serious and specific dangers and where major operations are necessary for the conservation of the property. Currently, 52 sites are inscribed on the In Danger List. A property can be removed from the In Danger List once it is no longer under threat.

CLIMATE CHANGE IMPACTS

In 2020, the International Union for the Conservation of Nature (IUCN) released its third Outlook Report for natural and mixed cultural/natural World Heritage properties (Osipova et al. 2020). It found that the impacts of climate change are manifold and include increasing frequency and severity of wildfires, coral bleaching caused by marine heatwaves, and damage from other extreme weather events including droughts and floods.

The IUCN Outlook Report concluded that climate change is already a high or a very high threat to a third of all natural and mixed World Heritage sites (83 out of 252). It further concluded that climate change also remains by far the largest "potential threat" which will quickly become a current threat unless ambitious climate action is taken this decade in the form of major reductions in emissions of greenhouse gases. However, the report also emphasized that natural World Heritage sites are a key part of the solution to climate change, in addition to making a substantial contribution to global biodiversity conservation, sustainable development and ultimately the quality of life on Earth.

Evidence for the impacts of human-influenced climate change on World Heritage sites has been most prominent for natural areas listed for their coral reefs and glaciers. A series of reports by the Intergovernmental Panel on Climate Change (IPCC) has documented how global warming is increasing the frequency of marine heatwaves and coral bleaching events and accelerating ice melt. Warm water corals and glaciers are

Image John Brewer Reef, in the central region of the Great Barrier Reef
Image credit Ocean Image Bank, The Ocean Agency, Matt Curnock

among the natural systems being most severely impacted by climate change (IPCC 2018).

Since the nineteenth century, human-influenced global warming has induced a worldwide glacier decline by limiting snow precipitation and extending and intensifying melt periods (Marzeion et al. 2014; Zemp et al. 2015; IPCC 2021). A 2019 study on the impact of climate change on glaciers in World Heritage sites co-authored by scientists from IUCN found that almost half of such sites could lose their glaciers by 2100 (Bosson et al. 2019).

Approximately 19,000 glaciers occur in 46 World Heritage properties. The study noted that since the 1950s, substantial glacier ice loss has been occurring with increasing magnitude in these properties. Bosson et al. (2019) predict glacier extinction by 2100 under a high emission scenario in 21 of the 46 natural World Heritage sites where glaciers are currently found. Even under a lower emission scenario, 8 of the 46 World Heritage sites are predicted to be ice-free by 2100.

Coral reef species have recently undergone mass mortalities from marine heatwaves (IPCC 2022). Most coral reefs are projected to undergo irreversible phase shifts due to marine heatwaves with global warming levels >1.5°C. The IPCC Special Report on 1.5°C concluded that tropical coral reefs are projected to decline by a further 70–90% at 1.5°C (*high confidence*) with larger losses (>99%) at 2°C (*very high confidence*) (IPCC 2018). The IPCC AR6 Working Group II report states that coral reefs are at risk of widespread decline, loss of structural integrity and transitioning to net erosion by mid-century due to increasing intensity and frequency of marine heatwaves (IPCC 2022).

The World Heritage List includes 29 marine properties that contain coral reef ecosystems. A UNESCO report released in 2017 found that nearly half of the 29 World Heritage properties containing coral reefs experienced bleaching stress more than twice per decade during 1985-2013 (Heron et al. 2017). The report found that under a business-as-usual emission scenario[1], 12 properties will experience annual severe coral bleaching by 2040, and all 29 by the end of the century. A 2018 update of the report found that of the 29 World Heritage listed coral reef properties, 15 were exposed to repeated severe heat stress during the 2014-2017 global bleaching event (Heron et al. 2018).

Climate impacts on the GBR have rapidly accelerated since the first recorded mass bleaching event in 1998, then the hottest year on record. A further five mass bleaching events have occurred in 2002, 2016, 2017, 2020 and 2022. Eighty percent of individual reefs on the GBR were severely bleached at least once in 2016, 2017 and 2020 (Hughes et al. 2021). In March 2022, the GBR experienced the first ever mass coral bleaching during a La Ninã weather phenomenon, which historically brings cooler than average conditions.[2]

Looking ahead, the IPCC AR6 report estimated that compared to 1850–1900, the global surface temperature averaged over 2081–2100 is very likely to be:

- **1.0°C to 1.8°C hotter under the very low greenhouse gas emissions scenario considered (SSP1-1.9);**
- **2.1°C to 3.5°C hotter in the intermediate scenario (SSP2-4.5); and**
- **3.3°C to 5.7°C hotter under a high greenhouse gas emissions scenario (SSP5-8.5) (IPCC 2021).**

There remains a significant global mitigation gap between current government policies and commitments and what is needed to meet the agreed long-term temperate goal of the Paris Agreement (IPCC 2022). Following the Glasgow climate conference in 2021, it is estimated that global greenhouse gas emissions in 2030 will still be around twice as high as necessary for the 1.5°C limit, even assuming that all mitigation pledges are implemented (Climate Action Tracker 2021).

RESPONSES TO CLIMATE CHANGE FROM THE WORLD HERITAGE COMMUNITY

The widespread scale and severity of observed climate change impacts and the projected risks from future climate change present existential threats to the OUV of many World Heritage sites. A collective engagement is urgently needed by the World Heritage community focused on how to use the Convention governance system to protect climate-sensitive sites. These existing mechanisms include assessment reports by the Advisory Bodies, expert reports from special site inspection missions, reports by the UNESCO World Heritage Centre, policy resolutions by the General Assembly of State Parties to the Convention, the legal framework provided by the Convention, the Operational Guidelines, and the In Danger List.

For more than 15 years, UNESCO has been concerned about the impact of climate change on World Heritage. A report and strategy on World Heritage and climate change (UNESCO 2007a) and a case studies report (UNESCO 2007b) were published by UNESCO in 2007. These led to the adoption, in the same year, by the General Assembly of State Parties to the World Heritage Convention of a Policy Document on the impacts of climate change on World Heritage properties.

At its 41st session in 2017, the World Heritage Committee expressed "its utmost concern regarding the reported serious impacts from

1 The projections under a high emission scenario - RCP8.5 - most closely represent the current emissions trajectory.

2 **https://www.gbrmpa.gov.au/the-reef/reef-health**: Reef Health update – 25 March 2022.

coral bleaching that have affected World Heritage properties in 2016-17" and called on all State Parties "to undertake actions to address Climate Change under the Paris Agreement, consistent with their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances that are fully consistent with their obligations within the World Heritage Convention to protect the OUV of all World Heritage properties". The Committee also requested the World Heritage Centre and Advisory Bodies to update the 2007 Policy Document.

Similarly, in December 2020, the 20th General Assembly of ICOMOS (the Advisory Body to the World Heritage Committee on cultural heritage) adopted Resolution 20AG 2020/15 which noted that "climate change impacts … are even now adversely affecting cultural heritage, and that the ability of some heritage sites to successfully adapt will depend on the rate of global GHG mitigation efforts".

In 2021 at its 44th session, the World Heritage Committee expressed concern about the impact of climate change on the cultural sites of Timbuktu (Mali) and the Rice Terraces of the Philippine Cordilleras. In addition, the state of conservation report presented to the Committee at the same session for the cultural site Venice and its Lagoon (Italy) stated that "The continued deteriorating effects of human intervention, combined with climate change on the vulnerable Lagoon ecosystem, threaten to result in irreversible change".

An updated draft of the policy document on the impacts of climate change on World Heritage properties was presented to the Committee at its session in July 2021, and to the General Assembly of States Parties in November of the same year. The renamed draft Policy Document on Climate Action for World Heritage provides high-level guidance on climate action to protect World Heritage, including the assessment of climate risks to World Heritage properties, adaptation to climate change and mitigation of greenhouse gas emissions. The draft recognises that "Risks are generally higher for warming of 1.5°C above pre-industrial levels than at present, but lower than at 2°C."[3] Further, it states that "climate actions related to World Heritage Climate Action Goal 3 (Mitigation)[4] … at the national level could be supported by … Implementing precautionary approaches that pursue pathways that contribute to limiting global warming to 1.5°C, with no or limited overshoot".[5]

The legal framework of the Convention and Operational Guidelines are suitably broad to address climate change. The draft Policy Document states, "While the enumeration of '*serious and specific dangers*' under Article 11 (4) of the Convention concerning the inclusion of properties on the List of World Heritage in Danger does not specifically refer to climate change (which was not under the same scrutiny in the early 1970s as it is now), the provision is clearly sufficiently broad to include its effects."

The draft Policy was not adopted by the General Assembly in 2021. Instead, the Assembly referred it to an open-ended working group, assisted by the World Heritage Centre, the Advisory Bodies and a panel of experts in the field of climate science and heritage, with a mandate to review and develop a final version for consideration by the Assembly in 2023. The draft Policy currently refers to:

"significant legal and interpretative questions raised by climate change with respect to the Convention, based on the line of questioning first proposed in Annex 2 of the 2007 Policy Document, as follows:

> 1. whether a property should be inscribed on the World Heritage List while knowing that its potential Outstanding Universal Value may disappear due to climate change impacts;
> 2. whether a property should be inscribed on the List of World Heritage in Danger or deleted from the World Heritage List due to impacts beyond the sole control of the concerned State Party (i.e. threats and/or the detrimental impacts on the integrity of World Heritage properties associated with the global impacts of warming from anthropogenic greenhouse gas emissions);
> 3. the reality that for some natural and cultural properties, it will be impossible to maintain the "original" Outstanding Universal Value for which they were originally inscribed on the World Heritage List, even if effective adaptation and mitigation strategies are applied, and this may require an "evolving" assessment of Outstanding Universal Value."

Below, we consider the second of these three issues: the In Danger List in the context of climate change, using the GBR as a case study.

INSCRIPTION ON THE LIST OF WORLD HERITAGE IN DANGER

The Operational Guidelines provide guidance to the World Heritage Committee on responding to a threat to a property's OUV from a serious and specific danger. The danger may be

3 Paragraph 39.

4 The Policy Document contains a Glossary which defines Mitigation as "A human intervention to reduce emissions or enhance the sinks of greenhouse gases".

5 Paragraph 94.

ascertained or potential. In either case, the Committee's role is to inscribe the site on the List of World Heritage in Danger. The Committee then develops and adopts a "Desired state of conservation for the removal of the property from the List of World Heritage in Danger" (DSOCR) and a program for corrective measures. As far as possible, the Committee works in consultation with the State Party.

The Committee undertakes annual reviews of all sites on the In Danger List and may request monitoring procedures and expert missions. The goal is to remove the site from the In Danger List once the property is no longer under threat. In cases where State Parties fail to implement corrective measures and the property has deteriorated to the extent that it has lost those characteristics which determined its inclusion on the World Heritage List, the Committee may decide to delete the property from the World Heritage List.

The draft GBR decision presented to the session of the World Heritage Committee in 2021 considered that the property was facing ascertained danger and should be inscribed on the List of World Heritage in Danger. The draft decision, a UNESCO representative explained, was a technical, objective evaluation of the state of the property.[6]

The draft decision noted "with the utmost concern and regret the conclusions of the 2019 GBR Outlook Report that the long-term outlook for the ecosystem of the property has further deteriorated from poor to very poor, that the deterioration of the ecological processes underpinning the Outstanding Universal Value (OUV) of the property has been more rapid and widespread than was previously evident, and that the property has suffered significantly from mass coral bleaching events in 2016, 2017 and 2020".[7]

The Operational Guidelines clarify that a property is in ascertained danger when it is faced with specific and proven imminent danger. The definition does not discriminate between danger that is of local, national or international origin.

As noted above, Australia has argued that it is not appropriate to single out the GBR for inscription on the In Danger List. IUCN's 2020 Outlook Report identified 82 other World Heritage sites that are facing a high or very high current threat from climate change. It is worth noting however, that IUCN's 2020 Outlook Report found that only two sites on the World Heritage List faced both an overall "critical" outlook and a very high current threat from climate change: Everglades National Park (USA), first inscribed on the List of World Heritage in Danger in 1993 due to poor water quality from agriculture and urban development, and the GBR.

Despite the clear scientific and technical bases for inscription of the GBR on the List of World Heritage in Danger due to the cumulative impacts of climate change, poor water quality and other local pressures,[8] the World Heritage Committee decided not to inscribe the site on the In Danger List but to re-examine the state of conservation of the site at its 45th session after a Reactive Monitoring Mission.

RESPONSE OPTIONS: STATE PARTY DSOCR AND CORRECTIVE MEASURES

Here we examine the response options that could follow inscription of the GBR on the In Danger List. As stated above, when a site is added to the In Danger List, the World Heritage Committee is to develop a DSOCR and a programme for corrective measures in consultation with the State Party.

Of the 16 natural properties currently on the List of World Heritage in Danger, seven[9] have DSOCR statements that have been adopted by the World Heritage Committee. DSOCRs for the remainder are in progress. In 2021, the GBR draft decision to the World Heritage Committee included a request to Australia to develop a DSOCR statement and a set of corrective measures. The Committee removed this language from the final decision but retained a request to Australia to accelerate action at all possible levels to address the threat from climate change.

Australia could prepare a DSOCR for non-climate pressures relatively quickly, given the

6 **ABC TV 7.30** interview with Dr Fanny Douvere, UNESCO.

7 While reiterating that "climate change remains the most serious threat to the property", the draft decision also noted that "progress has been largely insufficient in meeting key targets of the Reef 2050 Plan, in particular the water quality and land management targets, as evidenced by the conclusions of the 2017-2018 and 2019 Reef Quality Report Cards".

The amended decision adopted by the World Heritage Committee in 2021 expressed the utmost concern about water quality in the GBR. These concerns related to the impacts of agricultural fertiliser, sediment and pesticide runoff from the adjacent catchment entering the GBR through waterways causing the degradation of many inshore marine ecosystems. Other causes of decline include overfishing, the incidental catch of iconic species such as inshore dolphins, turtles and dugong and coastal development. The cumulative impact of these local pressures on top of climate change is causing accelerated deterioration in the current condition and future outlook of the GBR (Great Barrier Reef Marine Park Authority 2019).

Coral reefs that are unaffected by land-based pollution and fishing pressure are more likely to recover from bleaching - if sufficient time passes between recurrent bleaching events. It takes approximately 10 years for the faster-growing coral species to naturally regenerate at shallow depths (Johns et al. 2014). Recovery of slow-growing species in deeper water is much slower. The Australian Government has responded in 2022 to the Committee's concerns regarding non-climatic threats including a **AU$1 billion reef protection** package over nine years to, among other things, continue funding to improve farming practices and land management in coastal catchments.

8 According to the Australian Academy of Science, anthropogenic heating is now the greatest specific danger facing the GBR (Australian Academy of Science 2021).

9 Okapi Wildlife Reserve (DRC); Virunga National Park (DRC); Rainforests of the Atsinanana (Madagascar); Niokolo-Koba National Park (Senegal); Tropical Rainforest Heritage of Sumatra (Indonesia); East Rennell (Solomon Islands); Everglades National Park (USA).

Image Coral bleaching, the Great Barrier Reef. The photo was taken during the 2017 mass bleaching event which severely impacted the central third of the World Heritage property
Image credit https://www.theoceanagency.org/ocean-image-bank

effort already invested in the Reef 2050 Plan (Commonwealth of Australia 2021). The Australian and Queensland Governments designed the Plan to be the overarching framework for the protection and conservation of the property. The Plan includes goals and strategic actions for the period 2021-2025. The Reef 2050 Water Quality Improvement Plan 2017-2022 (State of Queensland 2018) includes land management and end-of-catchment anthropogenic water quality targets (currently being updated) that could be carried into the DSOCR.

A DSOCR related to climate change is more challenging but achievable. A climate-related DSOCR could be achieved by convening a technical workshop of Australian and international experts in heritage, climate science and policy, corals and other attributes of OUV from UNESCO, IUCN, universities, key NGOs and other interested stakeholders. Assuming that the GBR is inscribed on the In Danger List, the question arises as to what corrective measures could be undertaken by the State Party.

The GBR state of conservation report to the 44th session of the World Heritage Committee stated that 1.5 °C is "widely recognized as a critical threshold for the property". The draft GBR decision recommended that corrective measures focus on ensuring that the Reef 2050 Plan's policy commitments, targets and implementation adequately address the threat of climate change and water quality. It also acknowledged that the State Party on its own cannot address the threats from climate change.

The Paris Agreement requires each Party's successive NDC to represent a progression and reflect its highest possible ambition, noting that developed countries should continue taking the lead by pursuing economy-wide absolute emission reduction targets. Under the Paris Agreement, State Parties agreed to conduct a global stocktake in 2023 and every five years thereafter to evaluate, among other things, the adequacy of greenhouse gas mitigation contributions and to update and enhance their actions and international cooperation for climate action. Currently, the Reef 2050 Plan refers to Australia's first Nationally Determined Contribution (NDC) which includes the 2015 commitment to reduce emissions by 26 to 28% below 2005 levels by 2030. This contribution is insufficient with respect to the Paris Agreement long-term temperature goal of limiting warming to well below 2°C above pre-industrial levels and pursuing efforts to limit warming to 1.5°C (Lewis et al. 2019; Fragkos et al. 2021).[10]

It is likely that the 2023 global stocktake will reveal the need for all Parties to significantly increase their mitigation targets, and associated policies and programs, in order to meet the global warming limit of 1.5 °C. Assuming this is the case for Australia, an appropriate corrective measure would be to update the Reef 2050 Plan to include a commitment to ratchet up Australia's NDC to pursue economy-wide absolute emission reduction targets compatible with pursuing efforts to limit warming to 1.5°C.

A 2030 target in policy and law for reductions in greenhouse gas emissions, compatible with Australia's fair share of limiting global warming to 1.5 °C, along with a national action

10 A new Australian Government was elected on 21 May 2022 that has a new target of 43% emissions reduction by 2030, based on 2005 levels, consistent with 2 °C global warming; https://climateanalytics.org/latest/australian-electionanalysis-of-parties-climate-change-targets/

plan, would adequately respond to the GBR draft decision presented to the session of the World Heritage Committee, at least in relation to the climate component. Rapidly transiting from fossil fuel is an entirely feasible proposition for Australia given its access to solar and wind resources and its economic and technical capacity to rapidly transition to 100% clean energy (Blakers et al. 2017).

Currently, Australia's leading global role as a producer and exporter of fossil fuels significantly contributes to the Scope 3 emissions from their combustion, resulting in increased levels of atmospheric and ocean warming and damaging impacts to the OUV of the GBR (and other climate-sensitive sites). Consistent with its legal obligations under the World Heritage Convention - to do all it can to the utmost of its resources to conserve and protect the GBR – it can therefore be argued that Australia also has an obligation, above and beyond its Paris Agreement commitments, to rapidly phase out fossil fuel exports.

The global nature of climate change demands an expanded interpretation of the Convention to take account of a State Party's contribution to both domestic and exported greenhouse gas emissions. This presents political and societal challenges domestically and more work would be required to engage multiple stakeholders across the policy spectrum as well as domestic public audiences in preparing for and addressing those challenges.

Adequate progress in implementing the above commitments, adequate investment and regular reporting are all critical elements of a set of corrective measures.

ARE THE ACTIONS OF A STATE PARTY SUFFICIENT TO REMOVE A CLIMATE-ENDANGERED SITE FROM THE IN DANGER LIST?

A key question is whether a site that continues to be endangered by climate change should be removed from the In Danger List if the State Party is effectively implementing the agreed corrective measures, or whether it should remain on the List given that climate change continues to threaten its OUV.

It could be argued that if the Australian Government's policies and actions were compatible with a 1.5°C pathway and the government was effectively addressing non-climatic stressors, then the GBR should be removed from the In Danger List. However, there are a number of reasons why retaining the GBR on the In Danger List is appropriate and necessary despite commendable action by the State Party.

The first and primary reason is that according to the Guidelines, a site should remain on the In Danger List as long as its OUV and integrity remain in danger. Removal from the In Danger List should be based on sound scientific advice that reflects the actual state of a property so that appropriate recovery measures can be developed and implemented. A site would be removed from the In Danger List when scientific monitoring and evaluation shows that it is no longer in danger.

This evidenced-based approach is consistent with the unifying spirit of the World Heritage Convention: the shared responsibility to protect and conserve OUV would be recognition that the world community needs collective action to close the mitigation gap. Inscription on the In

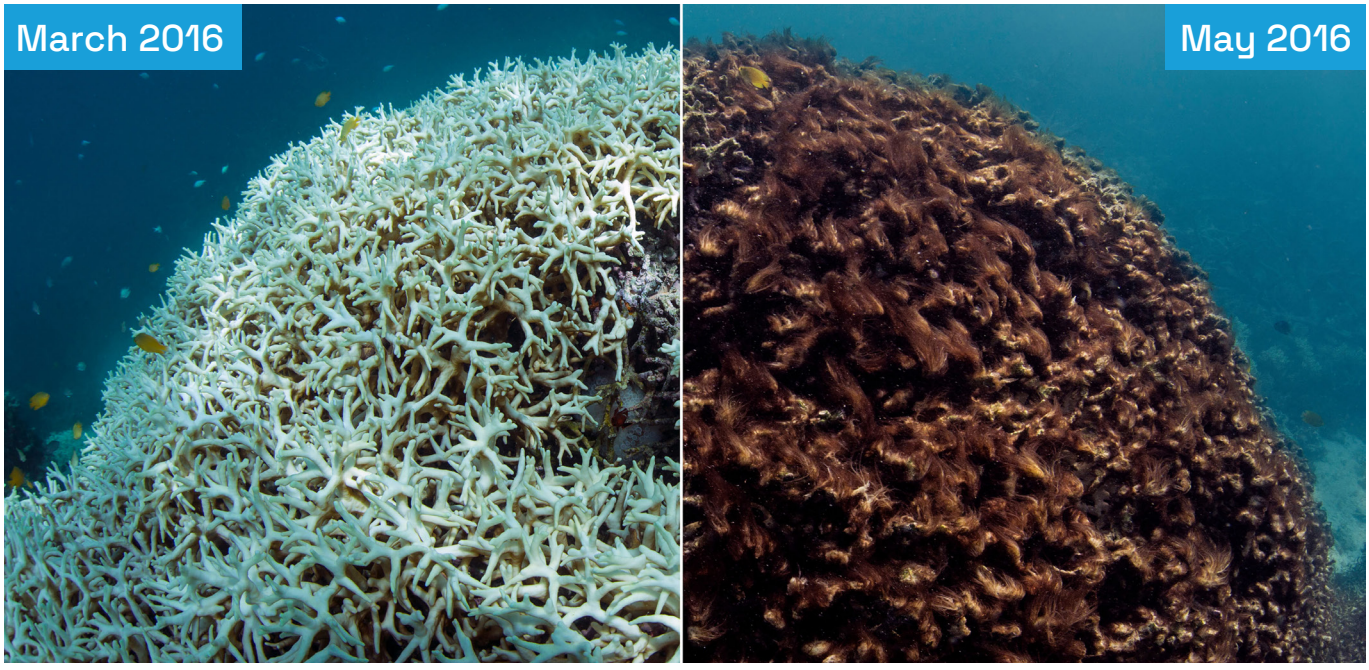

Image Coral bleaching, Lizard Island, Great Barrier Reef. The photo on the left was taken during the March 2016 mass coral bleaching event which severely impacted the northern third of the World Heritage property. The photo on the right was taken two months later, showing the coral overgrown with algae.
Image credit Ocean Image Bank, The Ocean Agency

Danger List should not be seen as a stigma but a call to action. Requiring a property to remain on the In Danger List even after the State Party has effectively implemented all climate corrective measures could also create an incentive for the State Party to engage with other parties to the Convention to ensure recovery of the property.

As an example, in terms of the impacts from marine heatwaves and coral bleaching, once placed on the In Danger List, the GBR would likely stay on the List until scientific advice on its OUV and integrity supports its removal. If the Australian Government develops and is effectively implementing a 1.5°C compatible NDC under the Paris Agreement, the World Heritage Committee could commend Australia for its corrective measures and note them as complete. The Committee could then continue to focus on other State Parties whose climate action is insufficient to protect the OUV of the property.

An alternative course of action would be to remove a site from the In Danger List once the State Party has developed and is effectively implementing a NDC consistent with the Paris Agreement and with subsequent decisions by the UNFCCC Conference of the Parties. However, this approach would be inconsistent with the Operational Guidelines which state that the property should not be deleted from the List of World Heritage in Danger until it is no longer under "threat" (Badman et al. 2009).

Removal from the List while the threat is still current, would reduce the Committee's scrutiny of the property while its OUV continues to deteriorate. Premature removal would present an inaccurate picture of the state of World Heritage, would be inconsistent with the purpose of the World Heritage Convention and would constitute a failure of the World Heritage system. Such a scenario may lead to the eventual deletion of the site from the World Heritage List due to damage from climate change.

CORRECTIVE MEASURES TO MITIGATE CLIMATE CHANGE IMPACTS BEYOND THE JURISDICTION OF THE STATE PARTY

To protect a climate-sensitive site, action is needed beyond the State Party in whose territory a listed site is situated. In this regard, the climate change decision adopted by the World Heritage Committee as its 41st session (mentioned above) represents an important call for unity for all signatories to take climate action to protect our shared heritage, but there are no consequences for State Parties who chose not to act. The World Heritage system needs to strengthen accountability within existing mechanisms to ensure that State Parties meet their obligations within the World Heritage Convention to protect the OUV of at risk World Heritage sites.

One action would be to include a new agenda item at each session of the World Heritage Committee to address all properties inscribed on the In Danger List that are experiencing climate change impacts. The recurring agenda item could include an update on the state of conservation of these properties from a climate perspective and be addressed to all State Parties.

However, simply reporting on climate impacts is a necessary but insufficient course of action. Taking note of Article 6(3) whereby signatories have an obligation to take action to avoid damage to sites beyond their territory, the agenda item could also include a draft decision that contains corrective measures applying to a select number of State Parties.

We acknowledge the capacity constraints of the World Heritage Centre and Advisory Bodies to assess State Parties' greenhouse gas emissions and climate actions. It would be appropriate and equitable, therefore, given common but differentiated responsibilities and respective capabilities and in light of different national circumstances, to focus on developed countries and on larger economies in transition.

To support this new agenda item, an assessment process would need to be developed by the World Heritage Committee in collaboration with the United Nations Framework Convention on Climate Change (UNFCCC) system. The State Parties that would be assessed are hereafter referred to as 'the identified State Parties'. The draft decision could:

- Identify the properties on the In Danger List that face a current high or very high threat from climate change, or that have been proposed for inscription on the In Danger List partly or primarily due to climate change;
- Report on the level of progress in undertaking the necessary climate action by the identified State Parties;
- Reiterate the importance of all State Parties limiting global average temperature to the long-term goal of the Paris Agreement, namely 1.5°C above pre-industrial levels, in order to protect the OUV of the endangered sites and to meet State Party legal obligations under the World Heritage Convention;
- Request corrective measures to be undertaken by the identified State Parties, including, where needed, a request to accelerate effort.

Under the Paris Agreement, measures to meet emission reduction targets are nationally determined. The kinds of "corrective measures" needed to be "World Heritage Compliant" (i.e. limiting global warming to 1.5 °C) would vary depending on national circumstances. However, the following measures by identified State Parties could be used as evidence that World Heritage commitments are being met:

- A 2030 emissions reduction target compatible with 1.5°C, with no or limited overshoot;
- National policies, laws and plans that are aligned with the 2030 target and a target for net zero emissions by 2050 at the latest, earlier for developed countries;
- Adequate progress in implementing the national policies, laws and plans, including an adequate investment strategy;
- The rapid phase out of Scope 3 emissions;
- A proposal for a fair-share contribution to international climate finance to support developing countries to reduce emissions.

Each of the identified State Parties could be requested to submit an annual report to the World Heritage Centre on the implementation of the above, for examination by the World Heritage Committee at the following session. The reports could be subject to review by an independent scientific body established in collaboration with the UNFCCC that could be relied upon by the Advisory Bodies to determine if the identified State Parties are taking effective and fair-share emission reduction action. IUCN and ICOMOS could present an integrated report at each session of the World Heritage Committee, outlining progress during the previous year by the identified State Parties in meeting the climate corrective measures and in contributing to the protection of the OUV of climate-sensitive properties on the In Danger List.

ADDITIONAL MEASURES

Integrating climate and biodiversity action should be regarded as a high priority for natural and mixed World Heritage sites given their Outstanding Universal Value and their implicit irreplaceability. This could be achieved by integrating the World Heritage Convention into a broader convention framework. Some important steps to integrate climate and biodiversity action have already been taken in the respective conventions:

- The UNFCCC Glasgow Climate Pact (paragraph 38) recognizes the importance of protecting, conserving and restoring nature and ecosystems to achieve the Paris Agreement long-term temperature goal; and
- The CBD has recognized the linkages between the biodiversity and climate crises as negotiations continue in developing the goals, targets and indicators for its post 2020 Global Framework.

Below, we outline several steps that the World Heritage Committee could take relating to the UNFCCC, the Convention on Biological Diversity (CBD) and IPCC and IPBES[11] processes. These steps are crucial to making the World Heritage Convention more effective.[12]

The World Heritage Committee could consider a formal communication to the UNFCCC and CBD requesting a standing agenda item at each of their respective Conference of the Parties to report on the condition and threats to World Heritage sites, including sites on the List of World Heritage in Danger due to climate change.

The Committee could also request the Bureaus of both the UNFCCC and CBD to recognise and appropriately reflect World Heritage issues in the work programmes of their respective scientific advisory bodies, the IPCC and IPBES, including any joint work programmes.

The global stocktakes of implementation of the Paris Agreement, which are mandated under the Agreement, could provide an important opportunity to assess the integrity of ecosystems within World Heritage sites. The global stocktake process of the UNFCCC is designed to provide input to the next step in the updating of Paris Agreement NDCs due by 2025. UN and other international organisations will be invited to submit technical inputs by 2022. The World Heritage Committee could participate in this process by providing scientific and technical input on the integrity of World Heritage sites endangered by climate change.

The assessment of the risks and vulnerabilities of World Heritage properties needs to be built into the chapter level (regional) assessments of the IPCC's Seventh Assessment report process. The design of this assessment will begin following the conclusion of AR6, for delivery by about 2028. Where these risks and vulnerabilities meet the appropriate criteria, the assessments should be included at the synthesis level of key vulnerabilities and risks.[13]

The World Heritage Committee could consider convening a scientific workshop on climate-related risks to both cultural and natural World Heritage properties in the next 12 months in order to synthesize and further mobilise scientific work to assess risks and options to mitigate them, and thereby

11 Intergovernmental Panel on Biodiversity and Ecosystem Services

12 Although not dealt with in this paper, from a climate mitigation, adaptation and biodiversity conservation perspective, it is also important for the World Heritage Committee to encourage parties to the UNFCCC and CBD to reflect on the adverse impact on biodiversity and on greenhouse gas emission accumulation in the atmosphere if natural and mixed World Heritage sites lose their integrity, stability and resilience.

13 See Box 19-2, Chapter 19, WGII, AR4 2014 https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap19_FINAL.pdf

evaluate and expand the available scientific literature for the IPCC AR7 assessment.

Lastly, the Committee could request the World Heritage Centre to commission an assessment of carbon stocks in all natural/mixed World Heritage sites, noting the recent report on blue carbon in marine sites and its vulnerability to climate change (UNESCO 2020). A new ecosystem accounting framework developed by the UN Statistical Division, UNSEEA-EA, provides an opportunity to reveal the stability of carbon storage, sequestration potential and ongoing risk of greenhouse gas release to the atmosphere from the impacts of climate change on natural and mixed World Heritage sites. This would provide important information on protecting World Heritage sites, and their substantial ecosystem carbon stocks can in turn help limit dangerous climate.

CONCLUSION

The World Heritage Convention is a powerful tool to promote accountability and transparency, and this more than ever needs to continue.

Management measures to address local threats are no longer sufficient to protect, conserve and transmit to future generations the Outstanding Universal Value of climate-sensitive World Heritage properties. We acknowledge the 2017 climate change decision by the World Heritage Committee which recognises the common but differentiated responsibilities and respective capabilities of State Parties. Acknowledging different national circumstances, it is crucial that all State Parties to the Convention adopt climate measures compatible with a 1.5°C pathway to protect the OUV of climate-sensitive sites.

A program of corrective measures to address climate change exclusively by a State Party with a climate-endangered site is necessary but insufficient to meet the aims of the World Heritage Convention to conserve, protect and transmit to future generations the world's globally significant heritage.

Where a State Party's measures do not remove the threat to a site endangered by climate change, no matter how fully the state has taken actions within its control, the integrity of the World Heritage system requires maintaining the site on the In Danger List until a scientific assessment deems the site is no longer under threat.

The nature of the climate change problem highlights the global approach needed to ensure the World Heritage Convention continues to achieve its aims. It is now necessary that corrective measures for sites endangered by climate change extend beyond the State Party in whose territory the site is situated and also apply to State Parties who bear the greatest responsibility for human influenced climate change.

To adapt to a warming world, the World Heritage system needs to extend its framework of accountability. This can be accomplished best through close collaboration with the UNFCCC.

The timeframe for a property remaining on the In Danger List as a result of climate impacts could be several decades. However, if the world dramatically scales up ambition to keep 1.5°C within reach and the global average temperature stabilizes, it will be possible for climate-sensitive sites such as the Great Barrier Reef to avoid irreversible damage and regain lost Outstanding Universal Value over time (Hughes et al. 2017).

The World Heritage Convention would be even more effective if the World Heritage Committee, World Heritage Centre and Advisory Bodies pursued closer integration with other international conventions and processes including the UNFCCC and the Convention on Biological Diversity, along with their respective scientific advisory bodies, the IPCC and IPBES.

Image Coral bleaching, Lizard Island, Great Barrier Reef. The photo on the left was taken during the March 2016 mass coral bleaching event. The photo on the right was taken two months later, showing dead coral.
Image credit Ocean Image Bank, The Ocean Agency

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