In Danger?

Climate crisis frames in polycentric World Heritage governance & the critical case of Australia's Great Barrier Reef

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Author's Note

For the duration of my PhD, crisis was not only the subject of my research, but increasingly became entwined in my life as a matter of course. In 2019, Townsville, the city I lived in at the time, suffered a 500+ year flood, causing food shortages and a housing crisis for those whose homes were affected by the flood. In 2020, Australia experienced 'Black Summer' the worst bushfires likely to have ever occurred in history, decimating over a billion native animals as well as many communities with, what some witnesses described, as a towering wall of fire. The Covid-19 pandemic that followed shortly after affected my health, living arrangements, and dramatically altered the research plan for my US Fulbright scholarship, which was delayed for over a year. To our collective shock, the Great Barrier Reef, beside which I lived and studied, experienced unprecedented mass coral bleaching in almost every year of my PhD. I count myself as both privileged and lucky to have avoided the worst of what many others have endured, but these experiences impressed on me the critical importance of climate change and crisis research, as they morph from abstract concepts to touch our lives in increasingly dangerous ways. To all the people committed to building our collective power for change, I dedicate this thesis.

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Primary supervisor: Professor Tiffany H. Morrison, James Cook University, University of Melbourne
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All supervisors contributed to development of ideas, methods, and provided editorial guidance to different degrees throughout the research project. Each chapter will provide more detail on author contributions.

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Contributions

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Abstract

As climate change impacts rapidly intensify, ecosystems are in jeopardy. Influential actors are now using crisis frames to draw attention and resources to this urgent threat, invoking 'Climate Emergency Declarations' and associated crisis terminology. Such crisis framing in environmental governance is socially constructed, controversial and contested. This is especially the case in polycentric environmental government systems where the power to definitively declare a crisis is distributed across multiple centres of authority. However, little is known about the benefits and pitfalls of crisis framing within polycentric systems; how crises come to be framed and contested; and the impact of crisis framing on the framing of solutions. Addressing this gap is critical as environmental governance becomes more complex and climate change intensifies. Can crisis framing help or hinder governance responses?

A case in point is the polycentric governance system of UNESCO's World Heritage listed Great Barrier Reef. The Great Barrier Reef has been proposed for the 'In-Danger' list due to damaging climate impacts and the failure of governments to manage water quality, resulting in a very poor long-term outlook for the ecosystem. However, the potential listing remains contentious. To understand crisis framing within the polycentric World Heritage governance system, I undertook a nested case analysis of the proposed 'In-Danger' listing for the Great Barrier Reef. I employed a constructivist epistemology, combining event ethnography with document review and key actor interviews. I asked: *how does the framing of the climate crisis affect the polycentric governance of a World Heritage listed ecosystem?* To shed light on these dynamics, I first synthesised the relevant body of theory from the interdisciplinary social sciences - including framing theory, crisis theory, social-ecological systems theory, policy and governance theory - to understand how crisis frames come to be constructed and contested, and importantly, to understand why.

My empirical research revealed that there are multiple political interpretations and policy impacts of crisis framing, depending on both actor perceptions and access to power. In the international arena, I found that marginalised actors who are unable to frame crises within formal meeting spaces can and are creating alternative spaces to frame crises. Such spaces include networks, reporting and parallel events. I also found that actors within polycentric governance systems have divergent views about the use, impact, legitimacy, and uncertainty about the effects of crisis framing, as evidenced through key-informant interviews on the diverse perspectives about the In-Danger listing of the Great Barrier Reef. In the case of the Great Barrier Reef, I found that crisis problem framing has converged – whereby key actors now collectively recognise the threat of climate change - however this convergence on the problem is not mirrored with convergence on the solutions. Fortunately, despite the multiple

perspectives on how to navigate solutions, Great Barrier Reef actors are increasingly focused on the need for climate transitions indicating a growing recognition of the need to shift priorities from marine park conservation to national climate change policy and climate justice. However, I also found there is a 'dark side' to crisis framing in the policy arena, where placebo policy or reduced participation in decision-making can also be a likelihood.

Drawing on these findings, I argue that more attention needs to be paid to understanding and managing crisis framing processes and feedbacks at multiple scales of polycentric environmental governance. I argue that environmental governance scholarship would be enhanced by taking a more relational view of crisis framing that incorporates the access and control of power and space in framing contests. Divergent normative positions on crisis framing mechanisms and their legitimacy, as well as their anticipated effects, must be anticipated and managed. Teasing out these relationships and differences helps us understand why actors who ostensibly want the same thing (such as scientists who value reef conservation) have come to very different positions on conservation mechanisms, such as the UNESCO In-Danger listing. Given these findings, I suggest a deeper interrogation of crisis framing in polycentric environmental governance with particular emphasis on the multiscale processes through which climate crises come to be constructed or silenced, and the politics, practices, and policies they enable.

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Term	Acronym	Description
Advisory body		Organisation that is responsible for providing technical advice to the World Heritage Committee.
Coral bleaching/mass coral bleaching events		When water is too warm, corals will expel the algae living in their tissues causing the coral to turn white. Corals can survive a bleaching event, but they are under more stress and are more likely to die if they do not have time to recover. Mass coral bleaching refers to a severe coral bleaching event occurring over a large scale.
Extreme climate events		Extreme weather includes unexpected, unusual, severe, or unseasonal weather; weather at the extremes of what has been seen in the past.
Great Barrier Reef/the Reef		The world's largest coral reef system, composed of over 2,900 individual reefs and 900 islands stretching for over 2,300 kilometres over an area of approximately 344,400 square kilometres in Northern Australia.
Heritage		Cultural, historical, or natural values that are inherited from past generations and preserved for future generations.
International Council on Monuments and Sites	ICOMOS	A non-governmental international organisation dedicated to the conservation of the world's monuments and sites, acting as an Advisory body to UNESCO on cultural heritage.
International Centre for the Study of the Preservation and Restoration of Cultural Property	ICCROM	An intergovernmental organisation working to promote the conservation of all forms of cultural heritage in every region of the world, acting as an Advisory body to UNESCO on cultural heritage.
In-Danger/ In-Danger listing		A process for adding World Heritage sites to the World Heritage In-Danger list when they are deemed to be under threat.
International Union for the Conservation of Nature	IUCN	The International Union for Conservation of Nature is an international organisation working in the scientific field of nature conservation and sustainable use of natural resources, acting as an Advisory body to UNESCO on natural heritage.
State Party		A national government that is a signatory of the UN World Heritage Convention.
World Heritage Committee	WHC	21 State Parties (rotating) that make the decisions at the World Heritage meeting.

United Nations World Heritage Convention/World Heritage	UN Convention that relates to the conservation and protection of cultural and natural heritage of humanity for future generations.

1. INTRODUCTION AND METHODS

‘My message is that if we do not care about the climate crisis and if we do not act now then almost no other question is going to matter in the future’ - Greta Thunberg at Davos, 2019

‘We are on a highway to climate hell with our foot still on the accelerator’ - United Nations secretary general António Guterres at COP27, 2022

‘A crisis is an opportunity riding in a dangerous wind’ – Chinese Proverb

1.1 Crisis framing of ecosystems in jeopardy

As global emissions rise and the severity of climate events increase, growing concern over climate change is leading political leaders, governments, media outlets, activists, and scientists to employ climate crisis framing. Framing involves 'selecting some aspects of a perceived reality and making them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described' (Entman, 1993, p. 52). By using terminology such as 'climate crisis' and 'climate emergency' (Climate Emergency Declaration, 2020), actors connect climate change with 'crisis' – typically defined as an urgent threat (Boin, Hart, & Mcconnell, 2009; McConnell, 2020). Climate crisis frames have now spread into the mainstream discourse as some actors believe in the need to warn humanity of impending catastrophe and view crisis as a means to stimulate political action (Ripple, et al. 2019). This framing is intended to raise attention and much needed action to put the brakes on climate change, yet, it also has the potential to invoke crisis politics, whereby 'states of exception' can enable governments to override democratic processes, side-line other critical issues in society, or use it to justify their own preferred solutions such as geoengineering (Hulme, 2019; Sillmann et al., 2015). These outcomes can run counter to the original intentions of those concerned.

Beyond the climate emergency, crisis framing has also been employed within environmental governance systems as a mechanism to improve protection of species or ecosystems under immediate threat. Environmental governance systems refer to the collection of rules, norms, actors, networks, and institutions involved in decision-making, both directly, and indirectly (e.g. advocacy) in relation to the environment (Adger et al., 2003; Cash et al., 2006; Morrison et al., 2019). An important example is UNESCO's World Heritage In-Danger listing mechanism, whereby World Heritage sites under urgent threat can be added to this list with the intention of raising awareness and urgent support from the international community. Yet echoing findings of crises elsewhere, recent empirical studies highlight that the In-Danger listing crisis framing does not have a single, predictable effect (Boin et al., 2009; Morrison et al., 2020; Nohrstedt, 2022). Rather, governments and other actors may respond in diverse ways to an In-Danger listing, depending on their political context, and their ability to evade what many perceive to be an unwelcome indictment about an ecosystem in jeopardy.

So far, there has been limited multi-level interrogation of crisis framing of climate change in environmental governance, especially as it relates to the In-Danger list. Is crisis framing a crucial tool to improve awareness, action, and outcomes? Is crisis politics helpful or harmful in dealing

with climate change? How are climate crises constructed and contested in environmental governance systems? How do actors perceive the costs and benefits of crisis framing?

This thesis is an exploration of the complex dynamics of climate crises in environmental governance regimes from the perspectives of those involved in it – from the international venues where crisis framing contests occur annually, to the local, where the crisis framing of an ecosystem stays marred in daily controversy. I focus specifically on climate crisis framing in World Heritage ecosystem governance to better understand the processes, benefits, and pitfalls that climate crisis framing can elicit. Through this research I aim to contribute to a better theoretical understanding of climate crisis in environmental governance, with the hope that these new insights can help us better navigate climate crises into the future.

1.2 Emerging crises: climate change and World Heritage ecosystems

Environmental governance systems are critical to the success of conservation globally, however the onset of climate change poses a significant challenge to their effectiveness (Agrawal, 2001; Ostrom, 2008). Climate change has global causes and effects which are non-linear and complex; creating uncertainty over specific ecosystem trajectories (Galaz et al., 2017). On the international stage, World Heritage has become a cornerstone of international conservation governance but is grappling with how to address climate change impacts. Spanning 1154 sites over 167 countries, the World Heritage Convention is a unique international treaty[1] established in 1972 by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) to foster international cooperation for the protection conservation of cultural and natural heritage of countries. World Heritage sites are classified as 'natural', 'cultural' or 'mixed' based on whether they exhibit cultural value, natural (ecological) value or a mixture of both cultural and natural values. For a site to be worthy of a World Heritage listing, it needs to be judged to have 'Outstanding Universal Value', which reflects exceptional significance to all humanity (UNESCO, n.d.). The World Heritage system has a responsibility to promote and diffuse best practice management of sites across the globe (UNESCO World Heritage Centre, 2019). A World Heritage site listing comes with responsibilities for national governments. Governments must monitor and report risks and threats to the site and make plans for conservation management. The World Heritage Centre, the secretariat of the Convention, is responsible for managing the monitoring and reporting of government efforts as well as risks to the sites.

[1] The full name of the treaty is the 'Convention concerning the protection of the World Cultural and National Heritage'.

Decision-making for World Heritage governance occurs at annual World Heritage meetings which take place in a different country every year. All State Party delegates can attend the meeting, however decision-making is concentrated to a smaller group of states. The World Heritage Committee (WHC), the key decision-making body under the convention, is comprised of a rotating committee of 21 State Parties who oversee the routine monitoring and reporting of the World Heritage sites, decide what sites will be inscribed to the World Heritage list, and decide which sites will be added to the 'In-Danger' list. If a site is under urgent threat, the WHC can invoke a crisis framing mechanism, which involves adding the site to the World Heritage 'In-Danger' list. The aim of the In-Danger list is to garner international attention and support for the site, where a government may access resources and assistance from UNESCO to improve conservation outcomes. Three organisations known as advisory bodies provide formal technical advice to the WHC: the International Union for Conservation of Nature (IUCN) to advise on natural sites; and the International Council on Monuments and Sites (ICOMOS) and the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) who advise on cultural heritage sites. The World Heritage Centre can also provide a recommendation on an In-Danger listing of a site to the WHC. However, the WHC is not bound to follow advice, and can choose to follow or ignore recommendations.

Despite many instances of World Heritage successfully achieving its mandate to protect and conserve (Cameron & Rössler 2013), many iconic World Heritage sites are now vulnerable to climate change. From rice terraces in the Philippines to historical cities such as Venice, and even the pristine environments of the Galapagos Islands, climate change poses a new challenge to the protection of World Heritage. Climate change impacts on World Heritage sites are widespread but vary depending on the region and type of site. Effects include rising sea levels, warmer oceans, heat waves, extended droughts and more intense rainfall (UNEP, UNESCO, & Union of Concerned Scientists, 2016). Anthropogenic climate change is a dramatic indication of the Anthropocene, a geological epoch defined by human impact on the function of Earth systems (Crutzen, 2002) The Intergovernmental Panel on Climate Change warns that if emissions continue at their current rate, global warming is likely to reach 1.5˚c above pre-industrial levels between 2030 and 2052 (IPCC, 2018, p.6). Because the intensity and frequency of climate change impacts will increase in the future, climate change represents a threat not only to the physical sites themselves, but to the economies, communities and societies in which World Heritage sites are situated. For example, tourism to World Heritage sites supports many local communities, but would decline if sites were no longer functional, or damaged beyond recognition (UNEP et al., 2016). Furthermore, many natural World Heritage ecosystems underpin the wellbeing and livelihoods of millions of people. For example, 275 million people world-wide depend on coral reefs that are prevalent in tropical, marine World Heritage sites (UNEP et al.,

2016). However, by 2030, 70 percent of coral reefs are expected to be degraded, severely affecting their provision of food and income for resource-dependent communities and countries (Frieler et al., 2013).

The wide-ranging and complex issue of climate change requires extending beyond the traditional remit of conservation and preservation, to address bigger questions of how societies and communities can mitigate causes of climate change, become resilient, and adapt to change. In 2016, a joint report by UNESCO, United Nations Environment Programme and the Union of Concerned Scientists, described climate change as 'one of the most significant risks for World Heritage to emerge since the adoption of the World Heritage Convention in 1972' (p.11). Climate change is a 'threat multiplier' because it compounds the existing stresses on World Heritage sites from tourism, resource extraction, urbanisation and other pressures. Thus World Heritage ecosystems are at a critical juncture as increasing climate change impacts and growing anthropogenic pressures reduce ecosystem resilience (Coral Reef UNESCO; UNEP, UNESCO, & Union of Concerned Scientists, 2016). World Heritage is currently revising its climate change policy, recognising that 'business as usual' approaches to conservation will no longer be effective (UNEP et al., 2016). Critical to this revision will be deciding on the role of the In-Danger list in framing, or not framing, the climate crisis for impacted sites.

1.3 Background: shifting dynamics of World Heritage governance

'Heritage professionals have commonly seen conservation as either a technical or management issue… this was never true… heritage protection has always been about resource management and resource allocation, and, therefore, has always had a powerful political dimension and a governance context'

- Logan (2013, p.158)

World Heritage forms an important part of the multi-scalar and polycentric governance regimes that exist to sustain many globally significant ecosystems (Morrison et al. 2019). World Heritage is a state-centred polycentric system, as Meskell & Brumann (2015, p.23) describe: 'As in many other globalizing arenas, the creation of UNESCO and the shift to global heritage ended up reinforcing the interests of the state since it is so strongly pegged to national identification, prestige, and the recognition of a particular modernity'. Despite its nation-state backbone, the broader polycentric system is comprised of multiple governing actors – not just governments, but also non-governmental organisations (NGOs) and other influential stakeholders that interact independently and interdependently in networks to shape policy outcomes (Morrison et al., 2023; Ostrom, 2010; Ostrom, 2008). The Australian Great

Barrier Reef World Heritage site, for example, includes many international, national, regional, and local actors (Morrison, 2017). Such regimes are theorised in social-ecological systems literature to be more resilient compared with other structures, such as hierarchical regimes (Morrison, 2017). Yet polycentric regimes can still experience reduced effectiveness over time, identified by Morrison (2017) as 'regime drift'. Arguably, regime drift has occurred in the World Heritage system, as power balances have shifted towards politicisation of decision-making by states (Meskell, 2014).

Trends in World Heritage governance at the international level have also included power shifts between countries, regions[2], and between experts and diplomats. The region of 'Europe and North America' dominated the early years of the World Heritage system, reflected by a disproportionate representation of Western sites on the World Heritage list compared to other regions (Meskell, Liuzza, & Brown, 2015). To address this problem, in 2000, the 'Cairns Decision' aimed to reduce European capture of the system and encourage more diverse listings from different regions. These institutional strategies to reduce European dominance increased listings, and in doing so also shifted power to non-Western countries and regions (Winter, 2014). The BRICs (Brazil, Russia, India, China) countries, for example, have often proven more powerful by voting in alliances together (Bertacchini, Liuzza, & Meskell, 2017). These power shifts have also occurred in parallel with a growing disparity between advisory body recommendations and the decisions made by the WHC, indicating decisions are not always made based on a scientific or technical assessment, but also in response to political power (Bertacchini, Liuzza, & Meskell, 2017; Meskell, Liuzza, & Brown, 2015). Meskell (2015) argues the dominance of nation-state ambitions that treat World Heritage like a business transaction instead of a conservation movement has brought the system to a standstill (Meskell, 2015a; Meskell, 2015b). In the Australian context the Australian government has used delaying tactics to stop the WHC reaching an 'In-Danger' decision in response to the threat of uranium mining adjacent to Kakadu (Aplin, 2004, p. 162). In this case, the mining proceeded, and the site was not listed as 'In-Danger'.

Despite these challenges, the World Heritage system can, and has, had many positive impacts on conservation (Cameron & Rössler, 2013). In the Australian context, an increasing number of studies describe how World Heritage processes have productively shaped conservation. Law & Kriwoken (2017), for example, describe how the Australian government expanded a World Heritage site in Tasmania, but after an election and change of leadership, then attempted to have the same section excised for logging. The World Heritage committee was critical in preventing the excision. Law & Kriwoken (2017) argue that the World Heritage listing increased the political and ecological resilience

[2] UNESCO groups countries into five regions: Africa, Asia and Pacific, Arab States, Europe and North America, and, Latin America.

of the social-ecological system. Similarly, Morrison (2017) found that the World Heritage system has been highly influential in strengthening the governance of the Great Barrier Reef through potential use of the 'In-Danger' listing. The crisis-framing mechanism of the 'In-Danger' listing has thus had many productive impacts on the governance of World Heritage, but until very recently, the 'In-Danger' listing has not been used for a site under threat from climate change.

1.4 Using framing theory to understand crisis in environmental governance

How environmental issues are framed shapes environmental governance, policies, practices, and outcomes. Climate change framing has been studied across a multiplicity of dimensions—from the effect of episodic (personal story of climate impact) versus thematic (describing climate trends) frames on policy preferences (Hart, 2011), to how media framing of climate risk has changed across time (Stecula & Merkley, 2019), and the effect of positive or negative frames on preferences for energy and the influence of counter-frames (Aklin & Urpelainen, 2013)— yet analysis of the implications of climate crisis framing for governance and policy is only just emerging (Cretney & Nissen, 2022; Hulme, 2019; Wright & Nyberg, 2017). This thesis addresses this critical gap by focusing on the role of climate crisis framing in World Heritage ecosystem governance.

Understanding the potential impacts of climate crisis framing is critical as more climate related crises are an unfortunate likelihood in the very near future. How climate change is framed affects individual level cognition as well as collective understandings of the issue (Jones, 2014). Framing affects how actors understand the cause of a problem, who is responsible for it, and what the solutions are (Entman, 1993). Framing can be highly political, occurring as a debate in the public sphere between multiple actors – or it can have de-politicising effects, designating an issue as a matter for technical or bureaucratic management.

Definitions of framing highlight its role in constructing individual and collective interpretations of events. Many framing studies employ Entman's definition of selecting aspects of a situation to craft a problem definition and/or solutions (1993, p.52). Similar to Entman, Ceresola emphasises how frames are used to make sense of objective events: 'Frames, in essence, are the ways that individuals and groups make sense of an association of events, injecting subjective meaning into objective happenings' (2019, p. 50).

These definitions reflect a constructivist worldview, emphasising the role of frames in the social construction of meaning. Framing can also be understood from a rationalist perspective where frames are chosen strategically to influence policy debates (Junk & Rasmussen, 2018). Both constructivist and

rationalist views of framing highlight that ideas and concepts about the world are not objective but are intersubjectively made and unmade through social interactions and processes. Interpretive approaches have thus become increasingly common in policy studies, representing a shift from prescribing policy solutions, to understanding how actors define policy problems through agenda setting and framing contests.

Framing analysis can also illuminate how governance actors understand and define risks, threats, and crises. Such framing research has foundations in psychology and sociology (Borah, 2011), where psychologists focus on the effect of frames on individual perceptions, and sociologists focus on frames used in communication. Sociological approaches are particularly useful for understanding how actors collectively frame climate risks, threats, and crises within an environmental governance system. Framing is thus intricately linked to agenda setting in public policy – how information is selected and communicated can influence how issues are managed by policymakers.

Frames can also be an advocacy tool for actors to exert influence over an issue (Junk & Rasmussen, 2019). In this way, framing affects whom policymakers listen to, and hence who has a chance to influence them. The power of framing in the media is often linked to Gramsci's idea of hegemony because of the deep-rooted ability of media to influence political change (Carragee & Roefs, 2004). According to agenda-setting theory, major frames affect what policymakers consider to be problems, and the credibility of key actors improves the acceptability of their information by others (Daviter, 2011). Hence, not all actors are able to be influential in framing policy issues, and key actors represent an influential source of collective framing.

In particular, van Hulst & Yanow (2016, p.104) propose a shift towards a polycentric governance perspective of collective framing in policy:

> 'a theory of framing needs to transcend the cognitive efforts of problem setting and solving, taking up instead the constant sense-making work of multiple actors involved in framing processes seen to be thoroughly political efforts aimed at policy problems, and the identities and relationships of those involved in policy processes.' (2016, p.104)

Such a perspective is key to understanding framing as an important aspect of World Heritage governance because at the core of World Heritage is reporting, dialogue and negotiation. Decision-making occurs through annual meetings, periodic reporting, and monitoring missions to identify risks and threats to a site (Cameron & Rössler, 2013; Meskell, 2014). Indeed, the effectiveness of the World Heritage classification system depends on transparency and reporting on the health of the ecosystem and management of the site. However, national governments can also control discourse and voting in

the World Heritage system to keep their site off the 'In-Danger' list and protect their political image in conservation (Morrison et al., 2020b). This thesis aims to further develop framing theory to better incorporate how crisis framing processes occur within such polycentric governance systems (Morrison et al. 2019), with a particular focus on how actors utilise and perceive crisis frames.

1.5 Research gaps

In this thesis I address three broad research needs to improve our understanding of climate crisis framing in World Heritage governance. Specific research gaps within these broad areas are discussed in subsequent chapters.

1.5.1 Informal and collective crisis framing in international conservation governance

The effectiveness of the World Heritage governance system has been questioned and critiqued in recent studies (Bertacchini, Liuzza, Meskell, & Saccone, 2016; Brown et al., 2019). Some analysts claim that the effectiveness of World Heritage in conservation is in decline due to tensions between the World Heritage Committee, advisory bodies and national government interests (Cameron & Rössler, 2013; Meskell, 2014). However, most studies to date focus on cultural World Heritage sites, not natural (ecological) sites, and focus on formally recognised actors such as national governments and international organisations. This state-centric structure has been criticised, yet the state-centric nature of the system has also been reflected in research, whereby informal civil society and Indigenous processes of involvement remain largely invisible and understudied (Cesari, 2010).

A significant aspect of 'heritage diplomacy' revolves around the ability of nation-states to control the discourse and decisions over what the World Heritage Committee considers to be a threat or crisis in conservation. While the World Heritage list offers a positive brand for tourism promotion and international recognition, the 'In-Danger' listing can bring unwanted attention to the governments and their policies affecting the site. National governments are astutely aware of the contentious nature of the 'In-Danger' listing of World Heritage sites and often strategise to avoid the attention these listings bring to their government (Brown et al., 2019; Logan, 2013). Strategies include diplomacy for influencing voting outcomes and framing environmental problems as not significant or a threat to conservation. The WHC, advisory bodies, governments, and management agencies are key actors who define and shape what conservation issues are identified and how they should be addressed[3]. Part of the reason why conservation issues are able to be contested within the World Heritage system is due

[3] These determinations are publicly accessible through the World Heritage website and the websites of some management authorities.

to the often unclear description of the Outstanding Universal Value (OUV) of the sites that are not tied to specific, measurable indicators (Reser & Bentrupperba, 2005). Therefore, a substantial aspect of the World Heritage system and the 'In-Danger' listing is the role of key non-state actors in defining and framing conservation issues in relation to how they affect the OUV of the site. There is thus a substantial gap in understanding how crisis framing processes occur in World Heritage meetings through other actors beyond formal state decision-makers.

1.5.2 Local, regional, and national perspectives on climate-based In-Danger frames

A small but growing literature focuses on 'In-Danger' listings in the World Heritage system, especially as it pertains to cultural sites. Leading studies come from scholars in cultural anthropology (Meskell, 2014), cultural economics (Bertacchini & Saccone, 2012) and cultural heritage (Winter, 2015). Key findings describe the increasing politicisation of World Heritage Committee decisions – from the original inscription of sites, to the consideration and implementation of the 'In-Danger' listing (Bertacchini, Liuzza, Meskell, & Saccone, 2016; Cameron & Rössler, 2013). Brown et al. (2019) point to the power of nation-states to delay the 'In-Danger' listing of their sites. This delay can cause World Heritage sites to languish in peril as governments protract UNESCO processes through diplomatic maneuvering. However less is known about how the possibility of an In-Danger listing affects natural sites and how stakeholders and governance actors perceive the In-Danger listing. Perceptions of crisis framing are important because they can influence actor responses and behaviours, and lead to significant policy implications, particularly when the actor is influential, like a government (Boin et al., 2009). However, in complex polycentric environmental governance regimes, the perceptions of other actors involved in governance are also important. Actors, such as those in social movements, may use crisis framing to rally attention and resources, or alternatively the issue can become so contested that it morphs into an ongoing 'policy controversy' whereby other actors persistently disagree with the crisis frame (Boin et al., 2009). There remains a substantial gap in how these dynamics are perceived to affect environmental governance, as in the case of World Heritage and the In-Danger listing for the Great Barrier Reef (Morrison, 2021).

1.5.3 Impact of crisis frames on the perspectives on solutions

Crises such as ecological and climatic events have been theorised to create opportunities for transformative policy solutions, however, current empirical studies show impacts vary across contexts. Analysts have suggested that crisis frames can trigger transitions and transformations as they expose the inadequacies of current approaches to problem-solving (Chaf & Gunderson, 2016; Hughes et al., 2019). Crisis frames may also increase support for policies that seek to promote sustainability, such as emissions reduction policy, which could potentially destabilise fossil fuel regimes (Geels, 2014). However, there are divergent opinions regarding the response to crisis. Stakeholders, policymakers,

and the public may have different framing, discourses, risk perceptions, beliefs, and interests that influence their opinions on the appropriate response to crises (McHugh et al., 2021; Rosenthal et al., 2001). Some crisis frames have the potential to yield transformative solutions, whereby transformation means a 'fundamental shift in human and environmental interactions and feedbacks' (Hölscher, Wittmayer, & Loorbach, 2018, p.1) and transformative solutions represent 'interventions that tackle lock-in of exploitative and extractive systems' as described by Morrison et al. (2022, p.1104). However, crises may also result in non-transformative or stability-focused outcomes (Datta et al., 2022; Nohrstedt, 2022; Kingdon, 1984). Studies of the Great Barrier Reef confirm convergence of perceptions that climate change is the biggest threat to the Reef, however there has been little empirical exploration of how this crisis frame shapes perceptions about solutions (Curnock et al., 2019; Thiault et al., 2020). This gap is important to address in order to assist crisis framers in shifting perceptions towards transformative and ambitious solutions, rather than stirring up unhelpful division and controversy.

1.6 Research questions and objectives

The overarching research question that underpins this thesis is:

Research Question (RQ) 1 (Chapters 3-8): How does the framing of the climate crisis affect World Heritage governance?

The subsequent chapters of the thesis explore distinct questions about crisis framing across various levels of the polycentric governance structure of the Great Barrier Reef with a focus on international crisis framing processes, as well as national, regional and local actor perceptions of crisis.

Secondary research questions for each chapter are therefore:

RQ 2 (Chapter 3): What are the opportunities and challenges of climate emergency framing for governance and policy?

RQ 3 (Chapter 4): How are crises framed in international governance?

RQ 4 (Chapter 5): What are the opportunities and challenges of the 'In-Danger' crisis framing for the Great Barrier Reef?

RQ 5 (Chapter 6): Does increased convergence over crisis definition lead to increased convergence over solutions?

In exploring these questions my objective is to contribute to a better understanding of how climate crisis framing occurs, what possible effects it may have, and to understand why climate crisis frames are supported or opposed by actors in environmental governance. Ultimately, I aim to improve our collective capacity as a global society to better conceptualise, and navigate, the current climate crisis.

1.7 Research design and methods

This section provides an overview and justification of the case study, my epistemological position, and the research design and methods. A detailed explanation of the individual methods, samples, sampling strategies and analyses applied in this thesis are provided in the separate methods sections of Chapters Three, Four, Five and Six respectively.

1.7.1 Nested case study

A nested case study approach (Figure 1.1) was designed to provide insight into how framing of the climate crisis affects World Heritage governance and the Great Barrier Reef World Heritage site in Australia. World Heritage sites are the 'canaries in the coalmine' for the governance of climate crises, particularly coral reef sites that are increasingly affected by climate change impacts. Given decision-making about World Heritage sites occurs at the international level, during UNESCO's annual World Heritage meetings, crisis framing at these meetings formed the focus of the first part of the study (Chapter Three).

For the subsequent Chapters (Three and Four), the Great Barrier Reef World Heritage site was the focus. Coral reefs are some of the most susceptible ecosystems to climate change, with a projected catastrophic 70-90% decline globally at 1.5c of heating and over 99% decline at 2c, as global temperatures continue to rise (IPCC, 2018; Morrison et al., 2020). Australia's Great Barrier Reef World Heritage site is a large tropical coral system governed to sustain conservation, fishing and tourism industries alongside agriculture, mining, and urban development within its catchment area. Despite being the largest and one of the most sustainably managed reefs in the world, it has been subject to multiple impacts including multiple mass bleaching events, increasing in frequency and severity (Hughes et al., 2017), with impacts expected to intensify in the future. Because this ecosystem is situated in a developed economy in the Global North with substantial conservation resources and capacity, its governance has the potential to be at the vanguard of new governance approaches for coping with climate change. However, despite these advantages, the Great Barrier Reef's governance is emblematic of the challenged governance of many conservation sites under pressure around the world. For example, tension and conflicts over issues affecting the Great Barrier Reef such as coral bleaching are also affecting developing country coral reefs such as the Maldives (Heron et al., 2017).

Conflicts over water quality issues and industrial development affecting the Sundarbans in India, also parallel the challenges faced in Great Barrier Reef region (Sarker et al., 2016). The Great Barrier Reef case is therefore both critical case on its own and generalisable across systems, with practical relevance for governance challenges faced by other conservation sites across the Global North and South.

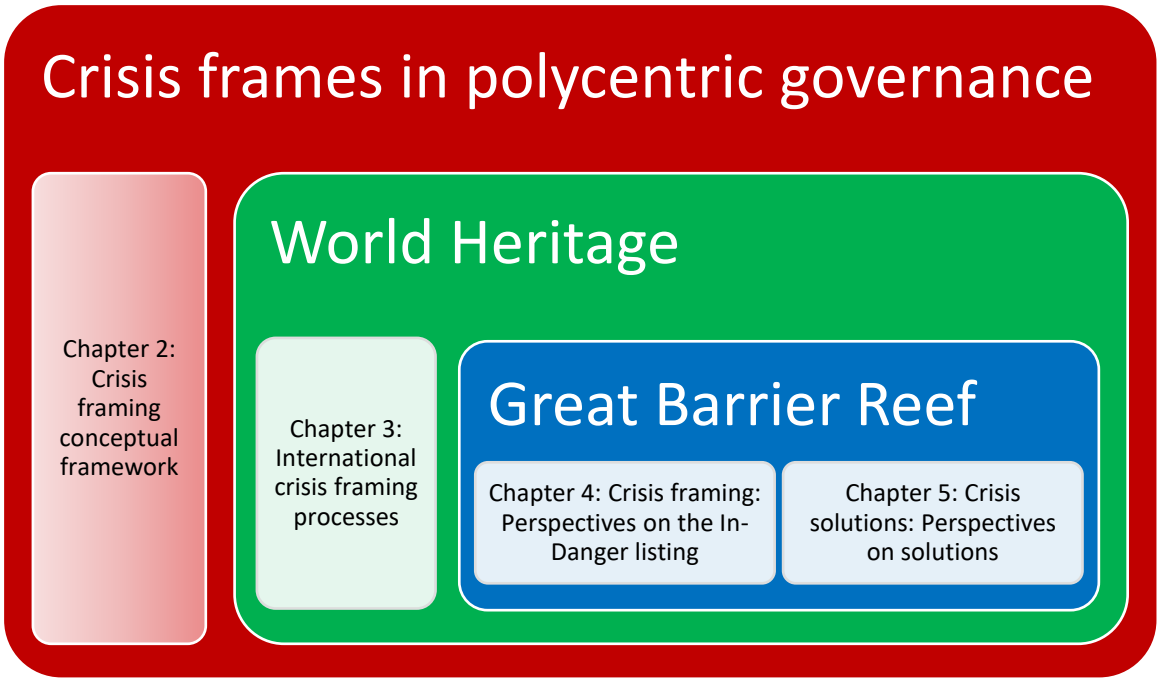

Figure 1.1 Nested case study of World Heritage and the Great Barrier Reef
Crisis frames in polycentric governance can be understood according to a crisis framing conceptual framework (Chapter Two). World Heritage governance at the international level is comprised of World Heritage meetings where crisis framing processes take place (Chapter Three). Nested within this system is the Great Barrier Reef World Heritage site where actors have their own perspectives on the use of the In-Danger listing crisis framing mechanism and solutions to climate change impacts (Chapter Four and Five).

1.7.2 Constructivist epistemology

The underpinning philosophical approach of my research in this thesis is constructivist. Constructivist epistemology is a philosophical perspective that emphasises the subjective interpretations of knowledge, and the way that these interpretations are constructed through social interactions, for example through discourses (Feindt & Oels, 2005). Constructivist epistemology is therefore a useful lens through which to explore the subjectivity of social knowledge and beliefs, including individual perceptions, and how collective definitions about ecological issues, such as climate crises, come to be socially constructed and contested. A constructivist approach recognises that knowledge about

climate crisis is not objective and fixed, but rather is continually (re)constructed through individual and collective experiences. Instead of seeking a single, objective truth, constructivism recognises multiple, subjective understandings of reality – and that these are influenced by many factors including identity, culture, social networks, and personal experiences (Moon et. al. 2021).

1.7.3 Data sources and analytic techniques

In this thesis, I use a qualitative and quantitative mixed-methods case study approach to understand crisis framing across multiple levels of environmental governance. According to Yin (1981), the use of multi-level case studies allows for the exploration of social phenomena believed to occur across various contexts. A multi-level approach was employed to investigate the issue of crisis framing in governance, with a specific focus on climate change as the crisis and the World Heritage system and Great Barrier Reef World Heritage site as the governance and policy system (Table 1.1). In Chapter Three, I focus on the international level of World Heritage, employing an event ethnography of crisis framing at a global heritage meeting. I follow this with an analysis of perceptions of the World Heritage In-Danger listing, using thematic analysis of qualitative interviews with key actors on the Great Barrier Reef (Chapter Four). In Chapter Five, I focus on perceptions of solutions to the climate crisis, using Q-method to explore Great Barrier Reef actor viewpoints, both quantitatively and qualitatively.

To increase the validity and reliability of the study, data triangulation is used, whereby multiple sources of information were utilised to increase the credibility and validity of the study and to gain insights from multiple perspectives. This included the purposive sampling of actors across scales (local to international) and sectors (science, industry, government and civil society) to account for multiple perspectives. Methodological triangulation was also employed through methods including qualitative interviews, Q-method, participant observation, and secondary document analysis. This range of methods allow for comparison of findings from different sources and deeper understanding of the results. Theory triangulation was also employed, synthesising crisis framing theory (Boin et al., 2009), theories of space (Massey, 1999), and transitions theory (Geels, 2014).

Triangulation strengthened the construct validity, internal validity, external validity, and reliability of the research (Yin, 2014, p. 45). Construct validity was made more robust by using multiple sources of evidence. Internal validity was strengthened by critically discussing rival explanations in the thesis, and by ensuring the reliability and repeatability of the study through clear documentation of the processes used to collect and analyse data. As this research was a complex case study that explored different interpretations and definitions of the issue, clear causation is not expected.

Table 1.1 Overview of chapter research questions, method, and analysis

Focus	Chapter/Research Question	Method & Data Source	Analytic technique
Conceptual: Academic debates on climate crisis framing	*What are the opportunities and challenges of climate emergency framing for governance and policy?*	*Method:* Critical review *Data source:* risk, crisis, governance, and policy literature	Critical synthesis of academic journal articles
Empirical: World Heritage meeting: international	*How are crises framed in international governance?*	*Method:* Event ethnography *Data source:* 2019 World Heritage meeting in Baku	Qualitative analysis of participant observation, field notes and recordings, participation, and interactions at World Heritage meeting
Empirical: Great Barrier Reef: international to local	*What are the opportunities and challenges of the 'In-Danger' crisis framing for the Great Barrier Reef?*	*Method*: Open-ended interviews *Data source:* Great Barrier Reef governance actors	Thematic analysis of interview transcripts and quantification of codes combined with document review
Empirical: Great Barrier Reef: international to local	*Does increased convergence over crisis definition lead to convergence over solutions?*	*Method:* Q-method interviews *Data source*: Great Barrier Reef governance actors	Quantitative analysis – factor analysis; qualitative analysis – thematic coding of qualitative interpretation from transcripts.

1.7.4 Structure of thesis

To undertake a multi-level investigation into crisis framing, first, I deepen existing conceptual frameworks on crisis framing by conducting a critical review of the risk, crisis, governance, and policy literatures (Chapter Two). I then undertake an ethnographic exploration at the international level, where I extend framing theory to incorporate a new spatial dimension by showing how space within policy venues can allow actors to dominate or be constrained in their ability to frame crises in the World Heritage system (Chapter Three). In the following chapter (Chapter Four), I focus on UNESCO's crisis framing mechanism, the In-Danger listing, to test the new conceptual framework using data from participant interviews and discuss the reasons why actors support or are against the crisis framing of the Reef. In my final empirical chapter (Chapter Five), I use Q-method to analyse participant perspectives on solutions and apply a Problem-Solution Space Framework to understand the relative wickedness of the problems and solutions in the context of climate crisis and transformative change. And finally, in Chapter Six, I discuss the overall theoretical and empirical contributions of this thesis to broader understandings of climate crisis frames in polycentric environmental governance.

2. UNDERSTANDING CRISIS AND EMERGENCY IN GOVERNANCE AND POLICY

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Contribution: I developed the research question for this chapter, undertook the review of the literature and wrote the chapter. Tiffany Morrison provided advice on the research question, methodological approach, and editorial support. Maria Lemos provided structuring and editorial advice on the manuscript. Chris Margules provided editorial support.

2.1 Introduction

From its origins in climate activism, the climate emergency declaration has now become a symbol of serious climate mobilisation. In 2016, the term first came to be used by mainstream media outlets (such as the UK's The Guardian) and in climate emergency declaration petitions circulating in Australia. From then on, governments and scientists around the world began to support climate emergency declarations in different countries and regions. By May 2020, 1488 jurisdictions in 30 countries had declared a climate emergency ('Climate Emergency Declaration,' 2020). The Oxford Dictionary declared 'climate emergency' Word of the Year for 2019, noting an increase in its use of 10,796%, compared with the previous year, and defining it as 'a situation in which urgent action is required to reduce or halt climate change and avoid potentially irreversible environmental damage resulting from it' (Oxford Dictionaries, 2019). The climate emergency frame has undoubtedly become a global phenomenon—recognised by the mainstream media, scientists, governments, and international figures such as Pope Francis. Yet the implications of this new framing for governance and policy remain under-theorized and under-investigated.

Many scientists, politicians, and activists support the 'climate emergency' frame because they view it as a powerful and honest message to spur political action: 'Scientists have a moral obligation to clearly warn humanity of any catastrophic threat and to 'tell it like it is'' (Ripple et al., 2020). However, this belief, and the framing that accompanies it, indicates a fundamental and un-interrogated shift in the way scientists, policymakers, and the public define and understand the issue of climate change. Framing involves 'selecting some aspects of a perceived reality and making them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described' (Entman, 1993, p. 52). Framing can occur across multiple venues by a range of actors, and is a source of power in social systems, influencing governance, and policy outcomes through issue salience, policy agenda setting, and mobilisation of action (Benford & Snow, 2000; Gaventa, 2006; Morrison et al., 2017, 2019). Climate frames are thus an important advocacy tool for actors to exert influence over political agendas, affecting what policymakers and the public consider to be problems, or keeping items off the agenda (Junk & Rasmussen, 2018; Kingdon, 1984). However, while climate change framing has been studied across a multiplicity of dimensions—including the effect of episodic versus thematic frames on policy preferences (Hart, 2011), how media framing of climate risk has changed across time (Stecula & Merkley, 2019), and the effect of positive or negative frames on preferences for clean energy policy and the influence of counter-frames (Aklin & Urpelainen, 2013)—analysis of the implications of climate emergency framing for governance and policy is only just emerging (Hulme, 2019). In this advanced

review, I seek to contribute to this emergent debate by reviewing crisis and emergency literatures to see what can be learned about the impact of crisis and emergency framing on governance and policy. I do so because although the new emergency framing may spur much needed action, it could also bring unintended consequences in the longer term, which need to be considered and avoided. In particular, there is a need to understand the interaction of multiple and overlapping global emergency frames (such as climate change and COVID-19), and to question how they may work together to shape democratic processes and policies over the long term.

Unlike a systematic review, which generates a representative cross-section of the state-of-the-literature, I used a critical review methodology to analytically examine the quality of the literature and draw together influential concepts into a new model that synthesizes and extends existing thinking on the topic (Grant & Booth, 2009). As our primary focus was emergency framing, I conducted a review of crisis and emergency literature. I focused on peer-reviewed, published scholarship by searching Google Scholar, Web of Science, and JSTOR databases using the key words 'risk,' 'crisis,' and 'emergency.' I then used a snowballing selection to strategically choose influential articles from our initial selection that could be used to inform our analysis and discussion. From these influential articles I then followed up additional noteworthy contributions to the field outside of online databases, such as Rosenthal et al.'s book Managing Crises: Threats, Dilemmas, Opportunities (2001). I then synthesised key findings from these debates to inform a discussion of what the shift from climate risk framing to climate crisis and emergency framing could entail for governance and policy. Please note that I have also included here an illustrative selection of key authors and works on risk as background to the discussion and analysis. As the risk literature in the social sciences is extensive, but not central to our discussion, I have not conducted a comprehensive review of risk. Rather I have sought to highlight the general risk and climate risk literature only where it is relevant to our discussion of framing, governance, and policy. Furthermore, while important, we have not specifically engaged with the immediate post-crisis response and disaster management literature, because my aim is to contribute to a broader debate about what the shift in climate framing from risk to crisis may bring to longer-term governance and policy (Asayama et al., 2019; Hulme, 2019; Sillmann et al., 2015). I begin the review with a brief illustrative discussion of risk, as 'climate risk' has been a dominant climate change frame and follow this with an in-depth review of crisis and emergency framing, drawing upon relevant climate change examples throughout. This critical review seeks to explore the implications of the shift from risk to crisis and emergency in climate change framing and stimulate a more informed discussion of what this global shift could mean for governance and policy.

2.2 Risk as a means to govern the future

Decades before the emergence of the climate change issue, scholars across a broad range of academic disciplines theorized and empirically researched risk. I therefore begin this discussion with a brief introduction of how risk has been debated and studied across the social sciences using an illustrative table of selected works (Table 2.1). While risk literature across the social sciences is extensive and not the focus of our review, it provides important background for understanding how individuals and societies construct climate change and navigate the uncertainty of different actions and hazards, as they relate to future out- comes. This is because, until very recently, the dominant frame for climate change was that it is a risk in the future. Table 2.1 provides an illustrative sample of key authors and works on risk, and highlights the variability of how risk has been theorized and researched over the last century. Indeed, risk scholarship has proliferated across many different disciplines in the social sciences, and definitions of risk are often challenged and contested by different areas of study and thought within these disciplines. However, across all of these risk conceptions lies the central idea that people can reduce uncertainty by calculating the consequences of activities in the present in order to manage future outcomes. Human agency and intentionality are thus very much a part of understanding risk, including climate risk. Risk is therefore considered both as an action that could bring undesirable consequences, as well as an activity that allows exploration of new possibilities (Giddens, 1999). Empirical investigations into the governance of climate risk have shown that despite the promise of risk as a means to control the future, understanding and accounting for risk remains challenging. It is often only when an extreme event occurs, that people learn about their exposure and vulnerability to risk. For example, Eakin et al. (2018, p. 1850015-3) highlight that in Puerto Rico 'hurricane María's 155 mph winds exposed existing infrastructural vulnerabilities, institutional incapacities, and socio-economic disparities,' revealing overlapping and negative feedback loops that had been relatively unknown before the storm. The complexity and uncertainty around climate change impacts, in terms of localized and global weather events, also make climate change different to other risks that governments and communities are used to addressing (Hurlbert & Gupta, 2016). Furthermore, while risk management approaches may have the appearance of uniformity and rationality, putting them into practice is rarely straightforward or devoid of power relations. This is because how societies govern risk is linked to beliefs around who should be responsible for managing risks; for example, individuals may think it is the role of government or private actors such as insurance agencies to protect them, while governments may believe it is the household's responsibility to prepare for risk (Eakin et al., 2018). Risk thus links closely to determinations of responsibility and blame, which can be most easily controlled by those in powerful positions (Douglas, 1992). Adaptation

as a response to climate risk, for example, has been suggested as a means to redistribute risk and vulnerability to different groups of people and ecosystems (Atteridge & Remling, 2018).

Renn et al. (2011) argue that to understand risk in society, we must take a broader view of risk, one that accounts not just for risk management but also for risk governance: inter alia, 'the various ways in which many actors, individuals and institutions, public and private, deal with risks surrounded by uncertainty, complexity and/or ambiguity' (Renn et al., 2011, p. 233). Risk governance has thus been positioned as a means to incorporate multiple knowledges and values, in an attempt to reconcile the technical, social, and political dimensions of risk (Renn et al., 2011; Van Asselt & Renn, 2011; Wachinger et al., 2013). Participatory and deliberative processes have also been suggested as a better way to make risk-based policy decisions, as they challenge the dichotomies between expert and lay knowledge of risk (Jasanoff & Wynne, 1998; Stirling, 2008; Wynne, 1995). Scholars have additionally suggested that accounting for the dynamic nature of exposure and vulnerability, both highly influenced by social change, is a way to improve governance of climate risk (Neill et al., 2017). Uncertainty and risk have thus not only created the need to extend peer com- munities outside of traditional boundaries, but they have also created a need for 'post-normal science' to better govern risk (Funtowicz, 2020; Funtowicz & Ravetz, 1993). Social science has been positioned as an important means for the co-production of actionable knowledge in the area of climate risk (Lemos et al., 2020), and the power of narratives around climate risk has been highlighted as a critical aspect of understanding cross-scale science-society processes in climate governance (Funtowicz, 2020). However, the dominance of risk and risk-based governance approaches are now being challenged as climate change is increasingly framed as a crisis. Events of the 21st century (including mega-fires, mass coral bleaching, and melting glaciers) and the 'climate emergency' declaration movement, are contributing to significant shifts in people's perceptions of climate change: one from 'future risk' to 'current crisis.' I therefore now turn to the crisis and emergency literature to understand how the shift from risk framing to crisis and emergency framing could shape governance and policy.

Table 2.1 Understanding risk in historical and contemporary scholarship (selected works)

Discipline	Risk Concept	Frame	Key Scholars
Economics	Risk as a probability	Investment return; financial institutions	Knight, 1921 Benaroch et al., 2006
Sociology	Risk as an organizing feature of modern society	Social and systemic risk emerging from modernity	Giddens, 1990 Beck, 1992
	Social amplification of risk	Role of communication (media framing etc.) in the interpretation of risk in societies	Kasperson et al., 1988
		Multiple knowledges are needed to govern risk in society	

	Risk governance needs to include multiple knowledges including scientific, political, and public values Importance of trust and personal experience in public risk perception and response	Public risk perception and relationship to behavioral responses	Renn et al., 2011; Van Asselt & Renn, 2011 Wachinger, et al 2013
Anthropology	Risk affects how responsibility and blame are attributed; risk perception is cultural	Existing social structures affect risk perceptions and beliefs (cultural theory)	Douglas, 1992
Psychology	Risk perception	Risk and hazard perception and behaviour of individuals and groups	Renn & Rohrmann, 2000
Business and Management	Risk as a management paradigm	Identification and control of risk for organisations; disaster risk management	Crouhy et al., 2000 Wisner, et al., 2012
Public Administration	Reputational risk	Reputational risk legitimized in risk management can have negative impacts	Rothstein, Huber, & Gaskell, 2006
Political Ecology	Risk and blame can be controlled by powerful actors	Ecological risk can be used to marginalize the less powerful	Collins, 2008
Political Science	Risk management as an organisational response to neoliberalism Risk as a type of governmentality	Risk management functions as a shield from criticism – 'secondary risks' Risk affects the practices and rationales of governing	Power, 2009 Dean, 2010
Human Geography	Anticipation of risk creates geographies of 'the future'	Risk as a means of understanding 'the future'	Anderson, 2010
Science, Technology and Society	Uncertainty and risk require 'post-normal science' for policy decisions Uncertainty and risk in science create space for actor interpretation and appropriation according to their interests False dichotomy between social and cultural knowledge of risk and scientific knowledge of risk Participatory risk appraisal can be used to 'open up' debates, not only to close them	Risk and uncertainty pervade environmental decision-making Deliberative political processes are needed to deal with scientific risk and uncertainty; need to re-cast the role of experts Boundary between 'expert' and 'public' knowledge of scientific risk is problematic Multiple social framings of risk should be considered	Funtowicz & Ravetz, 1993 Jasanoff & Wynne, 1998 Wynne, 1995 Stirling, 2008
Resilience and sustainability	Globally networked risks, transboundary risk Social science knowledge is needed to govern and manage risk	Interlinked social and ecological risks, complex and global dynamics of risk relationships Social science is needed to scale up and create actionable knowledge	Galaz et al., 2017 Lemos et al., 2020
Media and Communications	Framing and communication of risk	Media effects on public risk perception	Schäfer & Neill, 2017

2.3 Crisis and emergency: urgent threat in the present

The new 'climate emergency' frame is evidence that for some, perceptions of climate change have undergone a significant shift: one from 'future risk' to 'current crisis,' with 'crisis' understood as synonymous with 'emergency.' However, compared with risk, the literature dedicated to the study of crisis is much smaller and more recent. Since the middle of last century, crisis has been studied in relation to disaster management and governance (Hurlbert, 2017; Quarantelli, 1988), international relations (Allison, 1969), organisational psychology (Brockner & James, 2008), and organisational crisis management (Nunamaker et al., 1989) (Table 2.2). Only more recently has crisis become studied in relation to climate change (Lebel et al., 2011; Olsson, 2009). A substantial aspect of early crisis scholarship revolved around defining exactly what a crisis was, which in turn, generated a plethora of definitions (Jaques, 2009). Across the social sciences, crisis is typically understood as an event or process, with stages before, during and after, and defined by the presence of uncertainty (like risk), as well as by threat and urgency (unlike risk) (Boin et al., 2017; McConnell, 2020). A common definition is that crises are 'events or developments widely perceived by members of relevant communities to constitute urgent threats to core community values and structures' (Boin et al., 2009, p. 89). Also, like risk, the definition of crisis focuses on the social interpretation of events, rather than the substance of the events themselves. For example, climate-induced ecosystem collapse may or may not be a crisis, depending on how social actors interpret and frame the collapse. However, defining when a crisis begins and when it ends is determined differently across the social sciences. According to organisational management approaches, the managers involved in the crisis define the event; whereas from a political science perspective, an event or issue is recognised as a crisis only after it has undergone a process of politicisation, whereby social actors treat it differently to an everyday occurrence ('t Hart & Boin, 2001).

2.4 Emergence and critique of discourses of climate crisis and emergency

While crisis scholarship has been emerging since at least of the middle of last century, it was not until very recently that the 'climate emergency' became a global declaration. In 2019, climate change framing shifted dramatically, with the 'climate emergency' entering mainstream discourse across the media worldwide. While the former framing of 'climate risk' connoted the future, discourses of crisis and emergency conveyed immediate danger or threat to people, ecosystems, natural resources, infrastructures, and/or to a particular jurisdiction, for example, a 'state of emergency' (Table 2.3). The choice of the word 'emergency,' rather than 'crisis' is a powerful one. While 'crisis' has been used to

describe a broad range of threats or negative situations—from public relations crises to environmental crises—'emergency' tends to describe more urgent and impactful phenomena, such as medical emergencies or natural disasters. The persuasive power of the emergency frame comes from the idea that 'defining a phenomenon as an emergency implies that it has properties of danger, immediacy, and is to some extent unexpected at least in specific location or timing' (Markusson et al., 2014, p. 282). The debate and contestation of crisis and emergency terminology by different actors is itself a manifestation of politics (McConnell, 2020). While some have doubted whether re-framing is enough to shift people's pre-existing beliefs, values, and behaviors about climate change (Bernauer & McGrath, 2016), others have contended the 'Global Climate Emergency demands a profound historical transformation of our civilization' (Gills & Morgan, 2019, p. 2).

Table 2.2 Understanding crisis in historical and contemporary scholarship

Field/discipline	Crisis concept	Frame	Key scholars
Political Science	Crisis decision-making	Decision-making by intergovernmental organizations and nation states in a crisis	Allison (1969)
Disaster Management and Governance	Disaster crisis management	Disaster/emergency responses by organizations	Quarantelli (1988)
		Adaptive governance of disaster	Hurlbert (2017)
Organizational Crisis Management	Crisis planning and response	Crisis planning tools for managing organizational crises	Nunamaker et al. (1989)
Crisis Management	Compound crises	Crises as both acute/instant as well as compound/creeping	Porfiriev (2000)
Public Administration	Crisis in public policy	Impact of crises on institutions, policy and politics	't Hart and Boin (2001), Boin et al. (2009)
		Crisis evaluation	McConnell (2011)
		Cascading crises	Galaz et al. (2011)
		Transboundary crisis management	Boin & Lodge, 2016
Human Geography	Emergency is the political motif of our era	Emergency narratives are over-deterministic	Adey (2016), Adey (2020)
	Emergencies are characterized by time intervals and hope that the responses can end the threat	Governance of emergencies as tools for mobilization	Anderson (2016, 2017)
	Constitutional and democratic dangers in states of exception	Emergency politics is undesirable as a means to deal with climate change	Hulme (2019)
	Crisis and emergency framing can legitimize and constrain certain types of action	Social sciences are needed in dealing with crisis and threats to avoid an overly technocratic focus	Hulme et al. (2020)
Organizational Psychology	Crisis as opportunity	Perceptions and response to crisis as an opportunity for executive leadership	Brockner and James (2008)
Public Relations	Crisis management	Defining crisis management	Jaques (2009)

Table 2.3 From a future climate risk frame, to a current climate crisis and emergency frame

Future risk frame	Current crisis and emergency frame
Uncertainty with positive or negative outcomes	Uncertainty, threat, urgency
Ascertaining risk	Identifying, contesting and evaluating crisis
Risk management (planning for future)	Crisis management (action in present)
Risk management can protect legitimacy	Crisis responses can build or threaten legitimacy
Comparatively low political pressure	High political pressure
Comparatively lower issue salience	High issue salience
Transboundary risks difficult to manage	Transboundary crises difficult to manage

Numerous concerns about climate crisis and emergency discourses have been raised. One concern is that the climate emergency frame has emerged from a political paradigm of climate 'deadline-ism,' that is, the narrative that we have a short and closing window of time to address climate change, beyond which the end of civilisation awaits (Asayama et al., 2019). Adey (2016, 2020) contends that emergency discourses are a political motif of our time and these narratives are problematic because they are overly deterministic. Another issue raised by Jordan et al. (2013) is the effect of setting urgent climate targets that are increasingly unlikely to be met. If emergency framing is not sufficient to motivate political actors to keep warming below two degrees, could the climate emergency frame lose salience? Climate emergency discourses have also been criticized as a dangerous way to deal with climate change, because they signal the need for emergency politics that promote 'states of exception' outside of established democratic processes, and in the process, side-line a range of other issues that also contribute to human wellbeing such as poverty reduction (Hulme, 2019; Hulme et al., 2020; Sillmann et al., 2015). However, others have argued that emergencies can trigger swift action, and therefore the emergency frame can be an important tool for rapid social mobilisation (Anderson, 2016, 2017). In fact, there is ongoing debate about the effectiveness of positive versus negative issue framing of climate change on engaging people to care about the issue and their own perceived efficacy to affect outcomes (Hornsey & Fielding, 2020). Recent evidence suggests that increasing people's perception of threat from negative messaging can be more effective than positive messaging (Hornsey et al., 2020; Morris et al., 2020), however the effectiveness of messages also depends on other factors, such as the political and social identity of the audience, and whether they are perceive the message as from their ingroup or outgroup (Fielding et al., 2020). Indeed, climate emergency framing to a large extent has been embraced by progressive sides of politics more than conservative, so emergency framing may be more effective at mobilising progressives than engaging conservatives, who may require other approaches. Additional understanding of the climate emergency phenomenon can be gained through exploring theoretical work on defining and understanding crises. Crises typically involve failure at multiple levels—individual, institutional, societal, and/or technological (Boin & Lodge, 2016). Due to a lack of an overarching authority, actors often have trouble evaluating crises

within a single narrative and thus rarely learn from these failures (Boin & Lodge, 2016). Crises are also not only events that are acute and instantaneous; but they can also be compound or creeping—such as chronic environ- mental crises (Porfiriev, 2000). However, while much is known about the role of crises or external shocks in non-incremental policy change (see overview by Nohrstedt & Weible, 2010), we know less about slow burning crises. Slow burning crises develop over long periods and take a long time to resolve—if they are resolved at all. Examples include climate change, plastic pollution of waterways and oceans, and the decline in global biodiversity. Recognition of slow burning crises is also often politically contested and requires resources, time, and effort to politicize the issue to the point where it has salience (Porfiriev, 2000; 't Hart & Boin, 2001). For chronic environmental problems, politicisation can thus take a long time and often remain disputed and stuck in a 'policy controversy' without ever being resolved. These slow burning or creeping crises are relatively understudied in crisis management literature and suggest that problems such as climate change could require very different crisis management approaches to those that are advocated in the literature.

Increased global economic and social connectivity also means that crises can now resonate further across spatial and temporal scales than ever before (Figure 2.1), but institutional learning from crisis events remains difficult (Galaz et al., 2011; Nohrstedt et al., 2021). This is because increased interconnectedness of ecological, social, and economic systems, nonlinear dynamics, and the uncertainty of ecological change, render the causes and effects of crises more difficult to understand and assess. Existing institutions therefore often struggle with the governance of such complex transboundary crises. For example, transboundary crises have been found to lead to loss of legitimacy for institutions due to the difficulty of effective coordination (Boin & Lodge, 2016). Post-crisis institutional learning can also be difficult. Methodological difficulties and subjective values also continue to plague the assessment of crisis management responses, for example, there is typically no overarching objective framework from which to judge crisis responses (McConnell, 2011). Politicians thus often engage in blame avoidance strategies during a crisis (Hood et al., 2016). For instance, in a study comparing different oil spills in the EU, Broekema (2016) showed how crisis evaluation reports and the intensity of international news media coverage shaped how government agencies learned from their respective crises. External influences, a general lack of clarity about what is being evaluated, and the potential for blame-shifting over crisis response success or failure can thus hinder organisational change to improve future performance after a crisis. Such challenges underscore the need to think more carefully about the potential governance and policy implications of the new climate emergency framing. Finally, we know little about the intersection of multiple and overlapping global emergencies. Climate events—from hurricanes to forest and bushfires—are already disrupting government responses to the COVID-19 pandemic, and vice versa (Phillips et al., 2020). The 2020

COP26 global climate summit, for example, was postponed to 2021. When hurricane Cristobal hit the Gulf Coast of the United States in early June 2020, questions arose about the effects of potential forced evacuation of people into shelters during the COVID-19 pandemic, causing serious economic and administrative stress for communities and governments (Sellers & Freedman, 2020). Conversely, the Italian city of Milan, hard hit by the COVID-19 outbreak, has approached the compound crisis as an opportunity for synergistic policymaking between health and climate, with plans to reduce road traffic and expand road space for cycling and walking, with the deputy mayor of Milan, Marco Granelli, declaring: 'Of course, we want to reopen the economy, but we think we should do it on a different basis from before' (Laker, 2020). There is also a gap in research on the effect of multiple emergency frames and responses on media salience, risk perceptions, and efficacy. If the advent of COVID-19 has reduced coverage of climate change, has this affected people's risk perceptions or generated 'apocalypse fatigue'? These unanswered questions highlight that more interdisciplinary research is critically needed to understand how climate emergency frames and responses interact with other global emergency frames and responses (Figure 2.1).

Figure 2.1 Social media meme framing global crises in health, economy, and climate as interconnected. Source: Facebook, April 5, 2020

2.5 Potential governance and policy implications of the new climate emergency framing

What are the potential long-term effects of the new climate emergency framing on governance and policy? Although there is variation in how an emergency frame affects governance, it is possible to

draw some common characteristics from the literature (Table 2.4). While the threat, urgency, and uncertainty of climate emergency framing may stimulate political action, it may also result in governance shifts. Emergencies heighten public attention to leaders and institutions responsible for action, and there may be more bipartisanship, at least initially ('t Hart & Boin, 2001). Emergencies can often change the nature of governance, shifting the status-quo into a new regime (Sabatier, 2007; Weible et al., 2009). Public policy theory suggests that emergencies often disturb stable policy subsystems: new actors are involved, policy actors can change positions, or resources are redistributed (Sabatier, 2007; Weible et al., 2009). In these 'states of exception,' there is often reduced scope for slower-moving democratic deliberation, in favor of 'experts' or technocratic governing (Anderson & Adey, 2012; Hurlbert, 2017). For example, research from the United Kingdom illustrates how public accountability was eroded during the COVID-19 emergency procurement of health equipment; due to a lack of parliamentary scrutiny and open tendering (Sian & Smyth, 2021). While emergency governance may only be temporary, it often leaves enduring legacies in governance systems due to power shifts between decision-making bodies. For example, Posnerf and Vermeule (2009) found that both the Global Financial Crisis and 9/11 saw increased executive power relative to the legislature in the United States. Raised public expectation for urgent action reduced the political benefits of partisanship, and this strengthened the political legitimacy of the executive to make sweeping policy with little oversight or criticism. After the Euro crisis, European Union governance also changed. Decision-making processes became less reliant on legal and political mechanisms of accountability (Dawson, 2015). These types of governance shifts are problematic because transparency and accountability mechanisms are vital to the functioning of democratic processes and long-term institutional legitimacy. One possible emergency governance shift could be the securitisation of climate change. Securitisation refers to an issue being addressed from a perspective of conflict and national security. Emergency framing could be used to justify extraordinary measures that may limit the scope of deliberation over climate responses, or result in 'politics of catastrophe' whereby policies and governance systems are narrowed (Aradau & van Munster, 2011; Markusson et al., 2014). This framing creates a 'them against us' dynamic and reduces the policy options for solving a problem, often circumventing traditional governance processes and design (Brzoska, 2009). Emergency framing could also be used to justify risky experimentation with geoengineering of climate or interventions in ecosystems (Flegal et al., 2019). Finally, the narrative of climate emergency may also serve to legitimise the role of 'global experts' to solve a 'global problem,' undermining alternative knowledges, worldviews, and interests, such as those from Indigenous communities who may benefit from place-based interventions that also address social injustice (Bravo, 2009). The emergency crisis frame thus has important implications for governance.

Table 2.4 Emergency climate governance

Common characteristics of emergency governance
Context
High issue salience/attention in media and society
Circumstances are considered "exceptional"
Dominant narratives (that may marginalize alternative worldviews/approaches)
Public awareness of new crisis-specific terminology
Reduced focus on non-emergency related issues
High political pressure for action
Actors
Smaller, more powerful group of key decision makers
Executive powers increase relative to legislature
Power balance of policy subsystems can change: winners and losers
Reduced partisanship
Decisions
Speed/urgency
Non-incremental change
Large shifts in resources
Radical policies and legislation with less initial oversight
Legacies that shape "post-emergency" governance

2.6 Multiple policy pathways for the climate emergency

Given the considerations outlined above, how might the climate emergency framing influence policy responses by policymakers? Our review above demonstrates that while framing policy issues as crises can contribute to the opening of a policy window for reform (Kingdon, 1984), crises can also be contested, and evaluating the success of crisis framing can often be mired in political blame-games. Emergency framing is thus socially constructed, and can both influence policy change or maintain the status quo. The use of 'climate emergency' terminology is an explicit attempt to frame the climate change issue to affect collective action and policy. Due to this political dimension, crises can become framing contests in which different actors have different perceptions of whether a situation is a crisis or not (Boin et al., 2009). Crisis framing can be a strategic choice by organisations and social movements to amplify political pressure around an issue (Boin et al., 2009). It can rally attention and resources from concerned actors, or it can become contested and an ongoing 'policy controversy' as powerful actors continue to question the validity of the crisis frame. In Figure 2.2, I show the social construction of climate emergency within a social–ecological system (Hughes et al., 2019). In this

conceptualisation, actors interpret climate change events within social–ecological systems. Interpretations, in turn, are affected by actor interests, identity, perception, and framing. Policy responses to climate event framing then feed back into the social–ecological system, influencing ecological states via policy outcomes and social interpretations. The likelihood of the 'climate emergency' framing to be helpful to climate policy is variable, because political actors will view the climate emergency as a political opportunity or threat (Boin et al., 2009; McConnell, 2020; Hornsey & Fielding, 2020) (Figure 2.2). Based on our review above, I develop four common pathways for the climate emergency framing (Figure 2.2) with the following explanation for each pathway:

1. Actors perceive the climate emergency as an opportunity for political and policy change and seek to focus blame and change the status quo. Actors frame treatment policy as the solution to reduce political pressure and for policy to address the underlying causes of climate events.
2. Actors perceive the climate emergency as a threat to political or policy preferences and seek to diffuse blame and defend the status quo. Actors may frame placebo policy as a solution to reduce political pressure while maintaining their own policy preferences.
3. Actors do not perceive a current emergency but anticipate climate risk in the future. Political blame may be limited to enable bi-partisan approaches to policy change. Actors seek risk-based policy change to mitigate future risk.
4. Actors do not perceive any climate emergency and do not seek to lay political blame or change policy. Framing supports the status quo and no policy change.

Policy responses often depend on whether actors perceive the emergency as a political threat or opportunity (Fielding et al., 2020; McConnell, 2019; Morrison et al., 2020b). As our review reveals, crises and emergencies can be a policy window for action—a threat with high issue salience creates political pressure for governments to act. The implications of framing issues as emergencies are thus variable. For some governments, emergency framing will be a political opportunity to create 'treatment policy' which addresses the root cause of an issue. For example, the US Democratic platform of the 'Green New Deal,' which aims for a transition to decarbonisation of the economy along with social justice provisions, does aim to address the root causes of climate change. However, implementation of such 'treatment policy' often involves high political risk and cost (Morrison et al., 2020a), as decarbonisation framings may also be perceived as a political threat by certain industries and organized labor groups for example. Alternatively, governments may create 'placebo policy' to demonstrate that they are 'doing something' to tackle a policy problem, rather than actually addressing deeper causal factors driving that problem' (McConnell, 2019, p. 8). For example, if governments want to maintain the status quo, or are averse to political risk, they may use symbolic

measures that are unlikely to threaten the status quo. Placebo policy can thus be useful to policymakers when they are under pressure to address an issue but lack the capacity or political motivation to address the cause of the problem. This is common where policy problems are complex, urgent and with high visibility and public expectations for solutions, such as climate emergencies (McConnell, 2019). In this case, policymakers benefit from less risk to their political and reputational powers, and being able to control policy agendas and to foster policy options that match their long-term governing ideology (McConnell, 2019). Moreover, there may be low political cost to making symbolic gestures using placebo policy. For example, Krause (2011) reports that while over 1000 municipalities in the United States have com- mitted to reducing carbon emissions as a response to climate change, ways to follow up or track the implementation of these commitments are limited. In Australia, government policy responses to climate change-induced coral bleaching have focused on adaptation and restoration strategies, with limited effort towards mitigation (Lubell & Morrison, 2021; Morrison et al., 2020a). In Canada, the British Columbia provincial government has supported natural gas development as a 'climate solution' yet there is a lack of evidence that demonstrates natural gas is a low-carbon alternative (Stephenson et al., 2012).

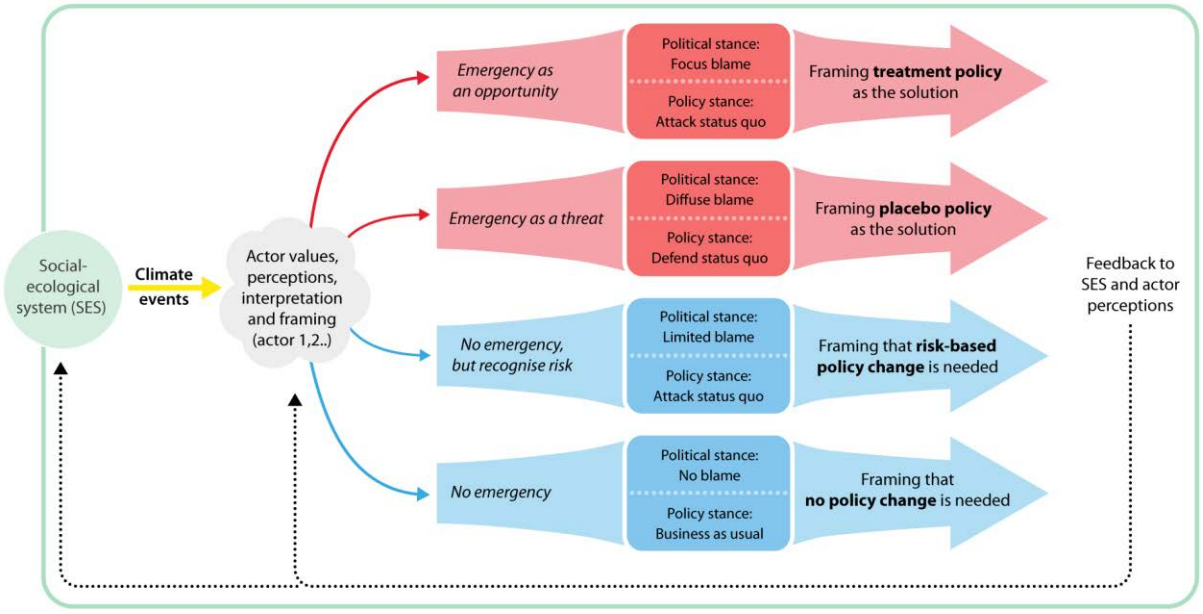

Figure 2.2 Crisis Framing Policy Pathway Framework - Figure above based on concepts from Boin et al. (2009, p.84)—crisis pathways, McConnell (2019) and Morrison et al., (2020) – public policy concepts, and Hughes et al., (2019) – social-ecological systems theory).

2.7 Conclusions and domains for future interdisciplinary research

It is critically important to understand what opportunities and challenges might materialize from the new climate emergency framing. In this review, I have suggested that much can be learned from crisis and emergency literature and how past emergencies have shaped governance and policy. I found that

recent work on crisis and emergency has been largely critical of emergency politics because of its anti-democratic tendency and potential for technocratic governing, while reducing the scope for accountability and transparency. While our review supports this critique of crisis governance, I suggest that the implications for policy responses could be more variable than currently anticipated, with variability depending on the perceptions, values and interests of different political actors. I identified four path- ways commonly found in the literature: 'no emergency,' to 'no emergency, but recognize risk,' 'emergency as a threat,' and 'emergency as an opportunity,' and highlight that more research is needed into political interpretations of emergency and how they are utilised by different governance and policy actors. Although this review raises more questions than it answers, I believe there are three key issues that need to be prioritised in future interdisciplinary research. First, the new climate emergency framing has implications for governance. While we agree on the need for urgent action, we must also recognise the danger that the call for 'urgent action' could reduce the power of marginalised groups and stakeholder representation in climate narratives and the negotiation of solutions. As such, analysts and policymakers need to ensure a wide view of the climate emergency and not lose focus on how climate change intersects with other dimensions of human wellbeing and socio-political dynamics. Second, given that the climate emergency framing could create conditions for placebo policy due to higher political pressure, how can scientists and policymakers identify and avoid placebo policy? Better understanding of accountability and transparency measures could help to counteract this type of policy, but there may be other ways forward also, including re-framing away from emergency to broader sustainability-oriented frames such as the Sustainable Development Goals, for example (Hulme, 2019).

Finally, how will the COVID-19 pandemic, another global emergency of historic scale and impact, intersect with the climate emergency? The new climate emergency framing does not exist in a vacuum; rather it competes and intersects with other emergencies (Figure 2.1). However, while scholars are mobilising to understand how com- pounding crises will interact with and feedback on each other, there has been little published research to date on how the framing of these emergencies intersect and reverberate across public perceptions, governance, policy, law, economics, and the media. Time will tell, but emergency overlap at a global scale is likely to be an important feature of many emergencies in the future. Given these global challenges that lie ahead, it is essential to build an interdisciplinary research agenda that critically examines how emergency framing can and will shape social, political, economic, and ecological futures.

3 STRUGGLE FOR SPACE: CRISIS FRAMING IN INTERNATIONAL GOVERNANCE

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Contribution: I developed the research question for this chapter, undertook data collection, analysis, and wrote the chapter. Tiffany Morrison provided advice on the research question, methodological approach, and editorial support. Chris Margules provided editorial support.

Abstract

How environmental crisis is framed shapes environmental governance, policies, practices, and outcomes. However, analysis of environmental crisis-framing is yet to fully incorporate a spatial dimension. Little is known about how the dynamics of space affect the ability of state and non-state actors to frame and contest issues at global meetings. I undertake an event ethnography of a World Heritage meeting to explore how the use of multiple spaces within a single policy venue affects how actors frame issues. Focusing on crisis, I show how different uses of space enable or limit actors in the framing of a crisis. I observe that beyond the formal meeting space where state actors typically dominate, there are other shared and alternative spaces where both state and non-state actors can be active in crisis-framing. I encourage consideration of these spaces as vital sites of environmental deliberation and negotiation for marginalised actors in state-dominated venues.

3.1 Crisis framing of ecosystems in jeopardy

Crisis construction involves the framing of an issue for urgency, attention, and action. Understanding crisis-framing is important because a formal declaration of crisis does not come out of nowhere – rather it will typically emerge from social actors and the collective framing of an issue, whereby multiple actors increasingly agree that a crisis is occurring and hence, legitimise the crisis (Junk & Rasmussen, 2018). Collective crisis-framing can be legitimised by top-down leaders' declarations of crisis in response to an event like a natural disaster, or from the 'bottom up' dynamics of civil society and social movements (Benford & Snow, 2000). Before a crisis is legitimised, a succession of informal crisis-framings will typically take place, led by a range of actors in often informal and marginalised spaces. When such actors are successful at crisis construction they can be understood as experiencing 'moments of influence'. Environmental anthropologists and political scientists have argued that it is critical for such influence to be reconceptualised in our understanding of global environmental governance 'to account for the multiple ways traditionally marginalized actors… exercise power, however limited' (Witter 2015, p. 906). Understanding how crisis is framed in space is important because it can have significant political, governance and policy impacts (as highlighted in Chapter Three) as not all actors are necessarily included in decision-making spaces. Access or marginalisation from space may help or hinder framing of crisis.

International meetings are important sites of crisis-making in international environmental governance. An example of such a site of governance are World Heritage meetings. The meetings are held annually by UNESCO to undertake the core mechanisms for conservation of World Heritage sites: *inter alia* monitoring and evaluation, and inscription on the In-Danger list (Refer to Introduction for more detail). If the WHC determines a site is damaged or under substantial threat of damage, they can potentially inscribe the site on the 'In-Danger' list. The 'In-Danger' list is thus a quintessential example of crisis-framing. In World Heritage, such crisis-framing is aimed to garner international attention to a site to trigger additional protective action and enables a state party to access resources and assistance from UNESCO and other concerned actors to improve protection of the site (Brown et al., 2019; Hølleland, Hamman, & Phelps, 2019; WWF & Dalberg, 2019).

In this chapter, I ask how can crisis-making in space become 'seen' in environmental governance? In doing so, I make one important contribution to scholarship. I bring to the fore the relationship between actors, framing, and space in environmental policy venues. Framing studies have traditionally focused on the discursive aspect of framing, rendering all else invisible, including power dynamics (Carragee & Roefs, 2004). While more recent framing studies have overcome this by incorporating the actor doing

the framing (Steensland, 2008), little is known about how framing between actors is mediated by the space in which it occurs.

To better understand how crises are constructed in space, I combine methods and concepts from ethnography and political geography. Both ethnography and political geography are theoretically and analytically rooted in traditions of feminist thought including the 'politics of the everyday', the performativity aspects of power, and how these occur in space (Hanisch, 1970; Massey, 1999; Schurr, 2013; Schuster, 2017). I use these concepts and methods to explore how international events such as World Heritage meetings are characterised by multiple political and spatial dynamics which allow or constrain actors to communicate and frame issues, permitting the researcher to 'see' the actors involved in crisis-framing before official decisions are made. My combined approach illuminates how actors who use crisis as a framing strategy support their own narrative, interest, and agenda. It also enables me to understand the role of both discursive and non-discursive elements in crisis-framing. This approach further enables exploration of the role of emotion in crisis-framing and legitimacy – and its role in communicating the 'urgent' and 'critical' aspect of crisis.

This chapter proceeds as follows: first, I present a brief overview of the concepts of crisis and framing as critical components for understanding the social construction of crisis. I then introduce space and performativity to suggest how they can add more insight to crisis-framing. I next explain my methodological approach to event ethnography, and how it can be useful to explore crisis-framing in different spaces at a World Heritage meeting. My results focus on three examples where spatial dynamics were different at the event and on how actors used these dynamics to frame crisis using discursive and non-discursive means. I identify three types of event spaces, including state dominated space, shared space, and alternative space. The findings indicate that space is a critical dimension affecting framing, and I show how the control and creation of space within a policy venue can be a framing tactic in itself. I find that both state and non-state actors can become 'crisis-makers' depending on the legitimacy and power they have within space. I conclude with a discussion of how this approach to crisis-framing illuminates the importance of connecting framing with both the actor and the space in which framing occurs, and implications of this for the policies, practices, and outcomes of environmental governance.

3.2 The space and performativity gap in current understandings of crisis framing

In this chapter, I examine crisis from two angles: the formal crisis framing mechanism of UNESCO, which is when a World Heritage site is added to the In-Danger listing; and as an informal crisis-framing attempts, whereby actors seek to frame an issue as a crisis outside of formal decision-making space. Framing analysis is useful because it can illuminate how environmental governance actors socially construct crises (See Chapter One for more detail).

These definitions stress a constructivist worldview emphasising the role of frames in the social construction of meaning. Framing can also be understood from a positivist perspective where frames are chosen strategically to influence policy debates, a tool for problem definition, and a means to bolster advocacy and build consensus (Allan & Hadden, 2017; Iiss, 1989; Junk & Rasmussen, 2018). Both constructivist and positivist views of framing highlight that ideas and concepts about the world are not objective but are intersubjectively made and unmade through social interactions and processes.

Framing therefore does not occur in a vacuum – rather it takes place by an actor in a particular context. Well established is the idea of 'policy venues' whereby venues consist of institutional arrangements that can offer opportunities or constraints to actors wishing to exert influence over policy or actions (Baumgartner & Jones, 1993). Actors can go 'venue shopping' to find a venue that offers the most desired impact (Pralle, 2003). However, the role of space as a framing venue is a critical gap in classical policy sciences. Rather, space has been explored more effectively in Feminist and gender related disciplines (Ardener, 1993; The Roestone Collective, 2014) where the notion of 'safe spaces' has arisen as a means to allow for expression and exploration of ways of being that may not be accepted or supported in other social and institutional settings, such as in educational settings (Holley & Steiner, 2005). Such space is created by social relations, but in turn also impacts social relations via group and individual expression, as has been explored in relation to experiences of safety and fear (Cranston & Lloyd, 2019). Following structuration theory by Giddens, (1984), whereby the relationship between structure and agency is viewed as coproduced; individuals can exercise agency, but are also a product of social structures. Social structures are maintained through the exercise of agency. Space therefore, can be considered a product of the interrelation of structure and agency; where these co-constitutive processes often occur.

The critical role of performativity is also under-explored in conceptualisations of space and how crises are acted out. Performativity refers to how social interactions can shape power relations, problem

definitions and social understandings within a particular context (Gregson, 2000). Performances can be viewed as constituting identity (Butler, 1988) and as how individuals present themselves to their audience (Goffman, 1956, 1967). Performativity can also be used to understand crisis management as 'dramaturgy': how the relationship between the actor and the audience creates meaning-making performances that affect legitimacy (Ball, McConnell, & Stark, 2021).When viewed through the under-used lens of performativity, I can therefore ground my understanding of space in the empirical and observable; to 'see' how actors represent themselves through discursive and non-discursive means.

In a nutshell, framing research to date has typically prioritized discourse and the categorisation of the 'frames' of an issue, with less attention paid to the actors doing the framing, or the policy venues and spaces within them, where framing contests take place (Badullovich, 2022; Carragee & Roefs, 2004; Carstensen & Schmidt, 2016; M. van Hulst & Yanow, 2016). In addition, little is known about how actors within international meetings use performance to frame the issue of crisis as a way to claim power in space.

I focus on a single policy venue to explore the spaces within it to understand how space within policy venues shapes the ability of actors to frame crisis. I draw this conception of space following Massey (1999), where space is the product of interrelations, particularly social ones, that occur in a place at a specific time. As Amin (2002, p. 389) describes, space is 'co-constituted, folded together, produced through practices, situated, multiple, and mobile. I take this to imply a reading of spatiality in nonlinear, non-scalar terms, a readiness to accept geographies and temporalities as they are produced through practices and relations of different spatial stretch and duration.' Thus, I conceptualise space as reflecting power structures: such as institutional and social rules and norms, but also having the possibility of agency, whereby power can be challenged. With this conception of space, the aim is to highlight how policy venues themselves can contain a multiplicity of spaces that affect the ability of actors to frame an issue as a crisis, but also how actors can exert agency to challenge particular framings.

In the following section I apply these synthesised ideas of space, performativity, and crisis-framing to an annual World Heritage meeting. I seek to understand space as an interaction of structure (relational power) and agency (ability of actors to take their own action).

3.3 Methods and data

Event ethnography draws on traditions in anthropology, such as 'thick description' (Geertz, 1973) and feminist studies, such as 'the politics of the everyday' (Campbell & Gregos, 2004), offering a novel way

to debate and discuss what has been rendered invisible or unimportant by other methods. The technique has emerged as an important method in environmental social science to address the historical lack of attention paid to meetings as a field site (Campbell & Brosiusa, 2011). Traditionally, ethnographic approaches relied on the observations of a single researcher, deeply embedded in the field (Preissle & Grant 2004). Recent environmental event ethnographies, by contrast, have been pursued by collaborative teams focusing on 'mega-events' such as the Convention on Biodiversity or the World Conservation Congress (Campbell & Brosiusa, 2011; Hughes & Vadrot, 2019). These innovative methods recognise the need to expand conservation governance research to include the global and the political, because increasingly the priorities, goals and resourcing of conservation efforts are determined at international meetings (Duffy, 2014; Vadrot, 2020). However, it has also been noted that the team approach can lack rich description and insight into the spatial particularities of an unfolding event (Billo & Mountz 2016). To build on these approaches and overcome some of the critiques, I therefore employ additional visual descriptions and observation in my approach. The aim is to bring the spatial dimensions of global environmental meetings to life. I selected the annual World Heritage meeting as the case study site because it is generally representative of events and spaces in other global environmental meetings, and because of its significance as a 'crisis making' event as World Heritage sites are considered for In-Danger listing. The meeting of focus took place from the 30th of June to the 10th of July in Baku, Azerbaijan, 2019. Alongside the World Heritage meeting, I also include a civil society event, the World Heritage Watch meeting on the 29th of June, a day prior to the formal meeting. As a single researcher at the event, I divided my time between attending the main meeting which I attended every day, however I also split my time talking and interviewing participants during sessions that focused on procedural matters not as relevant to the study topic. I attended in full the Opening Ceremony, the World Heritage meeting sessions on the inscription of the World Heritage list and the sessions on the In-Danger list, which represented eight days of the meeting. I also attended four evening side events that were selected based on the potential relevance to the study – linking to issues of conservation, climate change and Indigenous engagement.

I use a mixed-methods approach including established ethnographic methods of direct observation, informal conversations, and participation. I supplemented this approach with other qualitative methods including six interviews with civil society actors who formed part of the World Heritage Watch NGO, with backgrounds both in environmental conservation and cultural heritage. The interviews focused on their experience with World Heritage and why they engaged with the system. I also assembled relevant documents, such as the World Heritage Watch Report 2019.

I undertook discourse analysis of the above primary and secondary data using deductive coding attuned to identify crisis framing, defined as where terminology relating to 'In-Danger' and 'crisis' emerges in discourse. Inductive coding was then used to enable open interpretation of types of crisis framing that emerged, such as positive, negative, or process-specific. Primary data that was analysed included the transcribed recordings of the WHC sessions on site inscription, sessions on the In-Danger list, and the transcribed recordings of speeches at a conservation related side event. Secondary data analysis was undertaken using the same analytical approach as above but applied to the World Heritage Watch Report 2019. Such techniques are useful for understanding forms of power, meaning, and the lived experience of the people and practices that constitute an international regime (Adger et al 2003; Mackay & Levin 2015; O'Neill & Haas 2019).

While this methodological approach has benefits, it also has limitations. I do not claim generalisability of results, rather more studies would be needed to understand if the results are replicated across World Heritage meetings over time and across different institutions which no doubt have similarities and differences in their organisation and structure. In addition, I was not present at all happenings and interactions at the event, so my view is a partial representation. In this regard, I position my results as providing a few examples of crisis framing within this event, not as an overarching characteristation of all crisis-framing at the event. The approach is explorative, with the intention that examples represent a selective sample of relevant information that can be used to generalize crisis framing theory from this single case (Yin, 2014). More research from other researchers in this area to test, critique, or confirm these findings would be beneficial. In the ethnographic tradition of reflexivity (Lichterman 2017), I also acknowledge here my positionality, experiences and backgrounds in the conduct and interpretation of the research. As a Caucasian female social scientist, I am a citizen from the global North. I have lived and worked in proximity to a World Heritage site impacted by climate change and therefore, I am not an outsider to these issues; rather I have a stake in them, with a desire to protect these ecosystems. I therefore recommend that this work is understood with this context in mind.

3.4 Results

3.4.1 Entrance: curated consensus of World Heritage

On the morning of the first day, a line of glossy black buses formed outside the front of the convention center, waiting to disembark attendees. Azerbaijani volunteers in matching vests directed the new arrivals to the entrance and security checkpoint, where, like an international airport, identity tags were checked, and bags were scanned as people walked through the metal detector. United Nations and

UNESCO flags and signs erected throughout the entrance area became popular spots to pause for 'selfies' and group photos. Attendance had been arranged all in advance, and was heavily documented, with all participants' names, country, and institution formally listed in the meeting's final reports (Table 3.1).

Two towering escalators delivered the crowd to the second floor. The location of the World Heritage meeting was the main hall of the Baku Convention Centre, situated in the center of the floor, with food and lounge areas at the front and back. On either side of the main hall were walkways with adjoining side rooms. Inside the main hall loomed a massive digital screen across the front of the room, floating above a panel of key representatives: the Chairperson, World Heritage Director, Rapporteur and representatives from the advisory bodies: ICOMOS, ICCROM, and the IUCN. Delegates from the World Heritage Committee sat in the first few rows at the front of the hall (Table 3.2).

The main business of the World Heritage meeting had begun, and unfolding was an event in which state and non-state actors would seize opportunities across different spaces throughout the event to create or contest crisis – becoming their own 'crisis-makers'. A common point of contention that occurred throughout the meeting concerned the framing of crisis. 'In-Danger' framing meant that a World Heritage site had shifted from facing a threat or pressure (such as industrialisation or climate change), to be at crisis point, necessitating swift and immediate action – such as a monitoring mission from UNESCO and its advisory bodies, increased reporting, and actions from the State Party, and heightened global attention and support to protect the site.

While the Chairperson who directed the meeting could ask for a show of hands to support a motion on In-Danger, all final decisions were made 'unanimously', with no formal vote or record of dissent, creating a 'curated consensus' of decisions. Given this face of collective unity, contestation over crisis took place in various spaces; the discussions before decisions were made, at side events, backrooms and in activities outside of the meeting itself. Notably, when there was disagreement amongst delegations in the WHC over a decision, delegates would form small informal working groups to come to consensus in the side rooms, outside of the formal proceedings of the meeting. Participants at the event thus used these informal spaces to undermine or strengthen their 'curated consensus' around how crises were framed in the World Heritage system.

Table 3.1 Attendees at the World Heritage Meeting in Baku, Azerbaijan, June 30 - July 10, 2019

Committee Members Delegates	State Party Observers	ICCROM, ICOMOS, IUCN Observers	Non-State Observers (civil society)	UNESCO	Interpreters	Total
419	972	34	260	64	21	**1,785**

Table 3.2 WHC Delegates at the World Heritage meeting in Baku, Azerbaijan

WHC	**Number of Delegates**
China	191
Spain	32
Indonesia	30
Australia	27
Azerbaijan	21
United Republic of Tanzania	17
Brazil	16
Burkina Faso	14
Norway	12
Uganda	8
Bosnia and Herzegovina	8
Hungary	7
Zimbabwe	7
Bahrain	7
Kyrgyzstan	7
Cuba	4
Guatemala	4
Kuwait	3
Tunisia	3
Angola	1
Saint Kitts and Nevis	1
Total:	**419**

3.4.2 Opening Ceremony: State interests

Stepping through glass doors, groups of people entered the gleaming white modernist Zaha Hadid building for the opening ceremony of the World Heritage meeting in Baku, Azerbaijan on the 30th of June, 2019 (Figure 3.1). The large entrance hall buzzed as delegates and observers filtered into the music hall. First came the welcome speeches. Mehriban Aliyeva, the glamourous Vice President, First Lady, physician, and ophthalmologist, welcomed UNESCO to Azerbaijan. Aliyeva noted that the small country had recently hosted other international events like the Grand Prix and Eurovision. Hosting the annual 10-day World Heritage meeting, which is typically held by a different member country every

year, was another milestone for international attention and relevance for the nation. Aliyeva did not spend much time addressing the purpose of the event itself – the conservation of global cultural and environmental heritage. In the second part of her speech, Aliyeva gave a passionate account of Azerbaijan's ongoing conflict with Armenia over stolen land that she claimed remained occupied illegitimately. This was a 'moment of influence' (Witter et al., 2015) whereby the host state party had an uninterrupted platform to portray their own narrative of crisis in an uncontested space to a captive global audience.

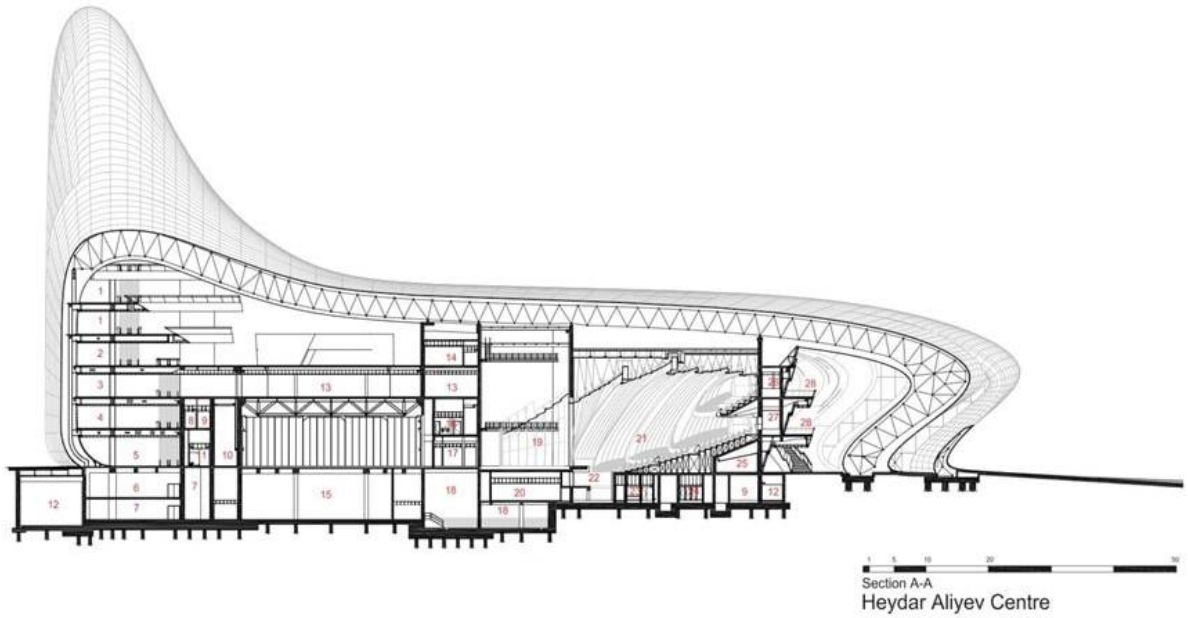

Figure 3.1 Location of 2019 Opening Ceremony, Heydar Aliyev Centre designed by Zaha Hadid
Source: (Zaha Hadid Architects, 2007)

3.4.3 Main Hall: In-Danger

For the World Heritage meeting, the attendees moved location from the Heydar Aliyev Centre to the next-door Conference Centre, a less sculptural and more typical business building. Back in the main hall where the Committee sat to make their deliberations, there were two distinct atmospherics, or states of being. Atmospherics refer to the intangible 'mood' of meetings and how collective affect can be experienced during summits and events (Lin, 2021). The first few days of the meeting were tense, flurried and tiring. Almost everyone - advocates from environmental NGOs, lone campaigners, and diplomats from national governments, wanted a chance to talk to (and persuade) members of the WHC about the fate of a particular World Heritage site. Words of encouragement from the Committee failed to overpower the atmosphere of grim resignation when sites were added to the In-Danger list. Article 11.4 allows for listing a site on the List of World Heritage In-Danger if it is threatened by 'serious

and specific dangers', including 'ascertained danger' or 'potential danger' (UNESCO, 1972). Yet these definitions left much space for interpretation and contestation. The use of the In-Danger listing, introduced in 1983, had become highly contentious for many countries, who did not want their sites added to the In-Danger list. The In-Danger list can be considered a crisis frame itself, as it is intended to raise awareness and mobilise action to protect a World Heritage site facing urgent threat. However, use of crisis frames such as the In-Danger listing were also contentious as they can be alternately interpreted as a political threat or opportunity, depending on a State Party's policy and political preferences.

This contentiousness was clear during the discussion of the amendment suggested by the State Party of Spain that the In-Danger list 'should not be viewed negatively' (Table 3.3). In this space during the formal procedures of the meeting, only Committee members were permitted to participate - through discussion coming to a final agreement about whether to accept, reject or modify the amendment suggested by Spain. The amendment triggered a debate amongst the Committee about the meaning and implications of this long-standing core mechanism of the Convention. The Committee debated the normative value of the In-Danger listing; in essence, over whether it should be viewed positively or negatively, or, whether its framing was beyond the purview of the Committee and up to how it was interpreted by the State Parties (Table 3.3). After a long discussion, Committee members were not able to come to an agreement about what the In-Danger listing meant (whether it should be viewed positively or negatively). An Australian delegate, for example, used the discussion to suggest adding more procedural requirements prior to the use of the In-Danger listing (Table 3.3). At a later point in the meeting, the Australian delegate revisited the use of the In-Danger listing, additionally arguing that the process should exclude climate change on the basis that climate change was a global, not site-specific, threat that affected many ecosystems around the world. However, the final amendment simply echoed the original Convention with the phrase that the In-Danger listing 'aims at marshalling international support'. Nevertheless, WHC members continued to claim throughout the debate that more discussions were needed about the In-Danger listing. Clearly, debates over the In-Danger listing were likely to continue well into the future, highlighting that discussions in the Main Hall are state-dominated space (Figure 3.2) where State Parties can contest the meaning and usage of the In-Danger crisis mechanism to frame the process to suit their interests.

Table 3.3 Varied frames in WHC debate over the In-Danger crisis-framing mechanism

Type of framing	Example
Positive framing	[The In-Danger list] 'should not be viewed negatively by the State Party' (amendment to draft decision by Spain)
	'We also take note of the concerns and reservations in relation to cultural perceptions and differences in how we understand Danger listing as an efficient tool for safeguarding a World Heritage property... And it's something about trying to land on a shared understanding of this Danger List more as a possibility list or opportunity list because in fact that is what it is. It is an international mechanism which is there for all of us to commit to help in a difficult situation…' (speech by Norway delegate)
	'We have heard referenced several times during our debates Danger listing as punishment which when it comes on Members of the Committee, goes against the sense of what Danger listing actually is' (speech by Hungary delegate)
Context-specific framing	'Although, we know the Committee's intention is good; it is not ill intended, labelling anyone. But in reality, this term … can be perceived both as a positive encouragement for generating funding but on the other hand it is used as a threat or warning sign to States Parties… I think there is no established view on the List of World Heritage In-Danger, whether it's positive or negative. I think it's not necessarily helpful to put a clause here saying should not be viewed negatively by the State Party. It gives me—I mean if I am trying to draw an analogy it is as if you hold up a stick to a State Party and at the same time you want them to thank you.' (speech by China delegate)
Negative framing	'I think there are so many cases where the country has done nothing to deserve. The country was struck by a natural disaster and already has many challenges to cope with. We can't ask countries not to view the list negatively…' (speech by Brazil delegate)
Process-specific framing	'It would be a really good thing if by the time we got to the point where a place was being recommended for inclusion on the List of World Heritage In-Danger that the work had already been done to identify what those corrective measures were and that there was a properly costed and timed and sequenced action plan in place and ready to be adopted at the time the place was inscribed on the List of World Heritage In-Danger rather than that coming afterwards.' (speech by Australia delegate)

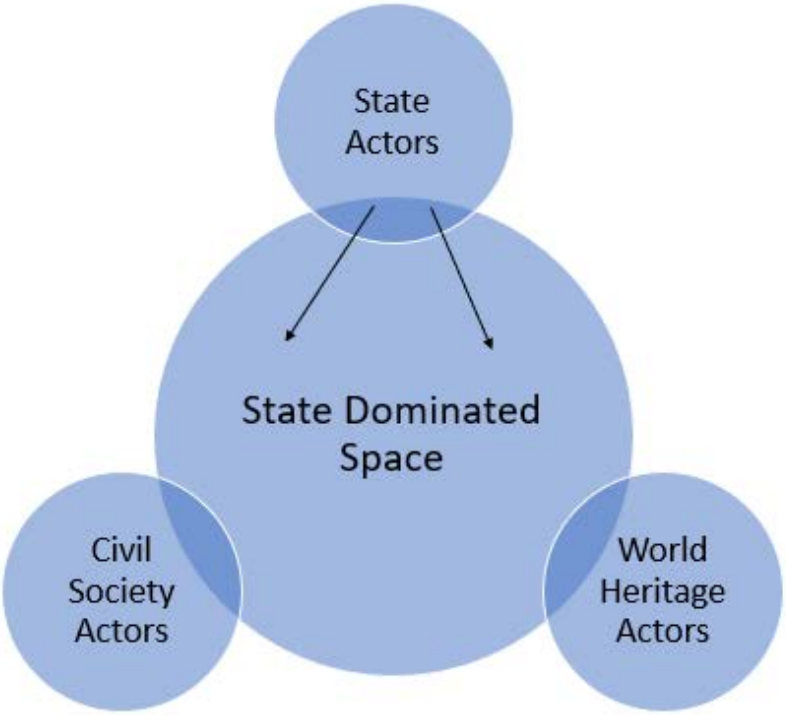

Figure 3.2 State dominated space in World Heritage crisis-framing
State actors dominate the discourse and decision-making on crisis framing, due to structural norms and rules of the formal meeting (represented as arrows) whereby the World Heritage Committee is the core decision-making entity. Civil society and World Heritage actors are present but are not part of the debate or crisis framing.

3.4.4 Side events: Framing climate crisis

Side events at World Heritage meetings are costly endeavors. Renting a room at the conference venue and supplying the customary finger food and wine at the inflated prices of the venue's management is a surprisingly high barrier to State Parties and NGOs alike. However, as international cooperation to address climate change has become more institutionally diverse over the past decade, reflecting the growing inclusion of climate change issues across multiple policy venues, non-state actors have become increasingly successful at bringing climate issues in through informal strategies where they hold more power in a space, such as petitions and side events (Chan, Stavins, & Ji, 2018).

Side events are symbolic performances typically used to promote a policy position or to launch a program or collaboration. Such events face a multiplicity of competitors. The first is that most basic and unavoidable condition for humans – fatigue. By day seven of the ten-day-long meeting, the cafeteria and lounge area, once buzzing with introductions, informal meetings, and gatherings, had begun to empty, transforming into a place to escape interaction: people sitting alone with a laptop or

phone; men in business suits snoozing on the couch. After yet another day-long meeting, fewer people lingered to attend the after-hours activities. For those who remained, side events ran concurrently: a drawcard event that attracted a packed room full of important people would inevitably result in disappointed hosts of other events who faced more meagre showings. Co-hosting an event with others who have a similar political, ideological, or promotional purpose is a common practice to share this burden. One such co-hosted event was the 'Resilient Reefs' side event; which entailed the launch of a new climate adaptation program by an international consortium of state and non-state actors. Initiated by Australia's Great Barrier Reef Foundation and funded by the BHP Foundation, other actors included the Australian and French Governments, environmental NGOs, and UNESCO's World Heritage Marine Programme. The initiative, and collection of actors involved, reflected a new paradigm shift for Australia, whereby corporate philanthropy and charities had begun to play a larger role in conservation efforts for the Great Barrier Reef World Heritage site. This approach was now reaching into the international arena; incorporating other states and reefs, including the small island state of Palau, to where the program was to be extended. Government representatives, standing in front of a banner filled with bright logos and giving hopeful speeches about the much-needed funding, led the event. The initial introduction by the Australian representative was focused on a new paradigm of proactive, interventionist conservation of coral reefs in the face of climate change.

However, the leader from Palau framed climate change and coral reefs in a vastly different way. She gave a moving and emotionally charged speech. Drawing the undivided attention of everyone in the room, she spoke slowly and became visibly emotional about how climate change was a crisis of life or death for her people.

> 'Climate change is no longer something that we in the island nations only hear of or see on television. It's here. It has washed upon our shores. Fighting for the sustainability of our heritage site is more than fighting for our subscribed site, it is fighting for our survival as an island nation in the face of climate change...'
>
> 'It is urgent. The status quo doesn't work anymore, the traditional island knowledge of conservation that we are so proud of as island people are no longer enough...'
>
> 'I had a speech all written out… but… this is about the survival of my people, of our way of life...'
>
> 'I will not apologise for being emotional. I thank UNESCO, I thank the government of Australia, I thank the Great Barrier Reef Foundation, BHP, and I thank everyone

> part of this… and I'm hoping and I'm committed to the success of this initiative, because the success of this initiative means the survival of my people...'

The speech from the Palau delegate had re-framed the issue of climate change from one of conservation to a crisis of existential survival. Her affect enhanced the authenticity of her claim with the audience – the life and future of her people were at stake, and emotions were a way to express this concern with gravity. Other audience members had video recorded the speech. Following the extended clapping after her speech, one host of the side event said

> 'I think there's no need to apologise for any emotions, I think you gave us all tears in our eyes, I see several people cried as well, because you are very right, at the end of the day it is often very technical when we talk about climate change we talk a lot about money as well… but ultimately it comes down lives, right? Which at the end of the day, is the essence of it all. So thank you for that very moving intervention…'

In this example, the Palau delegate became a 'crisis-maker', as she used the power she had to re-frame a climate resilience program into a narrative of climate crisis involving her peoples' lives. The emotions and affect in her speech stirred many people in the room, and afterwards, many people flocked to talk to her. Through her interaction with the audience, and the shared space, she summoned the power to frame the crisis (Figure 3.3).

3.4.5 Back in the Old City: Claiming space for civil society

Just like physical space, institutional space was easier to claim by forming a collective. Hosted by a local NGO, the World Heritage Watch meeting was held the day prior to the World Heritage meeting. The World Heritage Watch gathering took place in an old soviet-style building in Baku's 'Old City' area, a historical part of the city with stone buildings that had been converted into shisha bars and traditional restaurants to attract tourists, encased by walls that were under reconstruction. World Heritage Watch represents the re-organisation of civil society with the aim of salvaging the Convention. Emerging in 2012 from an International NGO Forum held prior to the World Heritage meeting in St Petersburg, it encompasses a network of varied actors from across the globe – from large environmental NGOs like Greenpeace and the World Wildlife Fund to individuals with an interest in a particular site. Attendees used brochures to fan themselves in the stiflingly hot room as the meeting got underway. Discussions focused on coordination: when to organise future meetings (and where) and when reports of site issues should be ready to give to the advisory bodies and World Heritage Centre for consideration. Organising a group with such diverse interests and locations was no simple task and funding to support such an endeavor remained challenging. Nonetheless, the network had

become an NGO registered in Germany run by volunteers with a website that described their aim to stop the hollowing out of World Heritage: 'World Heritage Watch ensures that the world heritage is not sacrificed to political compromises and economic interests' (World Heritage Watch 2021).

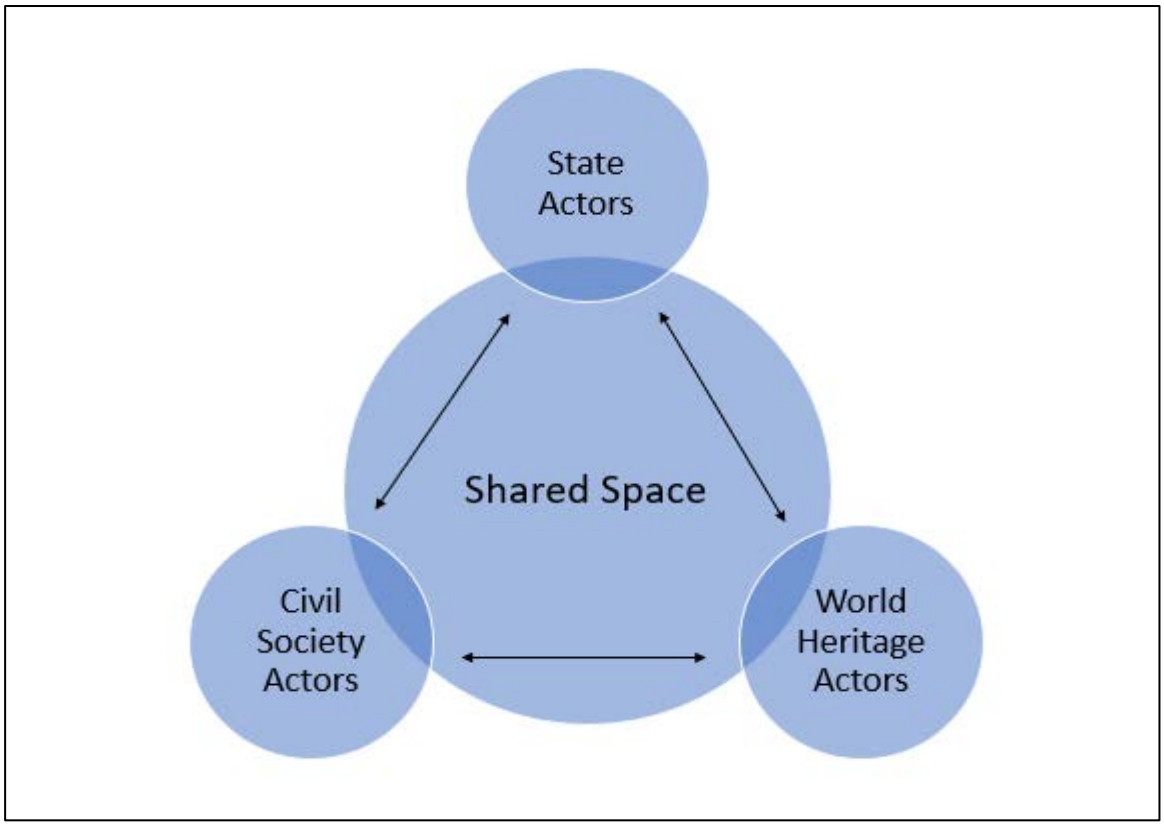

Figure 3.3 Shared Space
Structural norms for collaboration between civil society, state and World Heritage actors determine the shared discourse and crisis framing, represented by arrows. This shared space enables actors to exert agency and become 'crisis-makers' within a context of multiple and shared narratives.

World Heritage Watch had created new space for crisis-makers – members of civil society could contribute their own reports and data about World Heritage sites that would be compiled and given to the World Heritage Centre (coordinating body of UNESCO). Within the World Heritage Watch meeting, crisis-framing was limited to the short 2-minute interventions that were permitted from civil society about a World Heritage site under discussion. To overcome these time constraints, civil society actors had also begun to use alternative reporting to construct new crises not recognised by the WHC. The 2019 World Heritage Watch report, for example, includes chapters authored by civil society groups across natural, mixed, and cultural sites. Crisis is a consistent theme across all natural and mixed sites; invoking both crisis terminology and references to the In-Danger listing process (see Table 3.4). Thus, beyond the confines of the World Heritage Convention's state-based 'curated consensus', civil society

actors had begun to create alternative spaces, thereby building alternative power and legitimacy, and framing their own narratives of crisis (Figure 3.4).

Table 3.4 Crisis actors and frames in alternative space: the World Heritage Watch report

Actors	**Crisis frame**
EarthJustice, Environmental Defender's Office, Queensland Conservation Council, Environmental Justice Australia, Australian Marine Conservation Society	Recommendation 3: 'Require Australia to report annually on its progress in implementing the Reef 2050 Plan and its response to the **ongoing coral bleaching crisis**, including on the substantive near-term steps it is taking to immediately address the threat of climate change to the Great Barrier Reef World Heritage Area' (World Heritage Watch, 2019, p.41)
Greenpeace Russia	'According to the Operational Guidelines for the implementation of the World Heritage Convention, any modification of the legal protective status of the area is a potential threat to the outstanding universal value of a natural World Heritage property. Excision of the above-mentioned territories will be considered as a modification of the legal protective status of the area. Overall, adoption of this law can lead to the **inscription of most Russian world heritage properties in the World Heritage In-Danger list.'** (World Heritage Watch, 2019, p.20)
Alliance for Nature	Recommendation 4: **'the Semmeringbahn with surrounding landscape is placed on the List of World Heritage In-Danger**' (World Heritage Watch, 2019, p.70)
Ohrid SOS	'Given the **impending risk of a biodiversity crisis,** continued mismanagement, and failure to implement key RMM recommendations, the World Heritage Committee must place the Ohrid region on the **List of World Heritage In-Danger** until full compliance with RMM requests - most notably the moratorium on construction – is demonstrated.' (World Heritage Watch, 2019, p.76)
ClientEarth, Wild Poland Foundation, Greenmind Foundation, Greenpeace Poland, Polish Society for the Protection of Birds – BirdLife Poland, Workshop for All Beings, WWF Poland	'…The Bialowieza Forest WH site, lacking a 'management plan or management system' **fulfills the prerequisites for inscription on the List of World Heritage In-Danger.** The future of the Bialowieza Forest is uncertain and under continued threat.' (World Heritage Watch, 2019, p.14)
Greenpeace, Russian Geographical Society	Recommendation 7 for Istern Caucasus: **'Inscribe the property in the List of World Heritage In-Danger.'** (World Heritage Watch, 2019, p.23)
National Committee for Saving the Sundarbans	Recommendation 1: '**Add the Sundarbans of Bangladesh to the List of World Heritage In-Danger,** and request an urgent reactive monitoring mission to the site to quantify, map and itemize the full

	scope and magnitude of massive new industrial risks;…' (World Heritage Watch, 2019, p.33)
The Mikisew Cree First Nation	'Because of the ongoing failure of governments to respond to our requests for credible actions to manage the threats to the Peace-Athabasca Delta, in 2014 I turned to the World Heritage Committee, **filing a petition to have Wood Buffalo National Park inscribed on the List of World Heritage In-Danger.'** (World Heritage Watch, 2019, p.49)
Rivers without Boundaries International Coalition	'Landscapes of Dauria – **How to Prevent a Water Management Crisis?**' (World Heritage Watch, 2019, p.24)

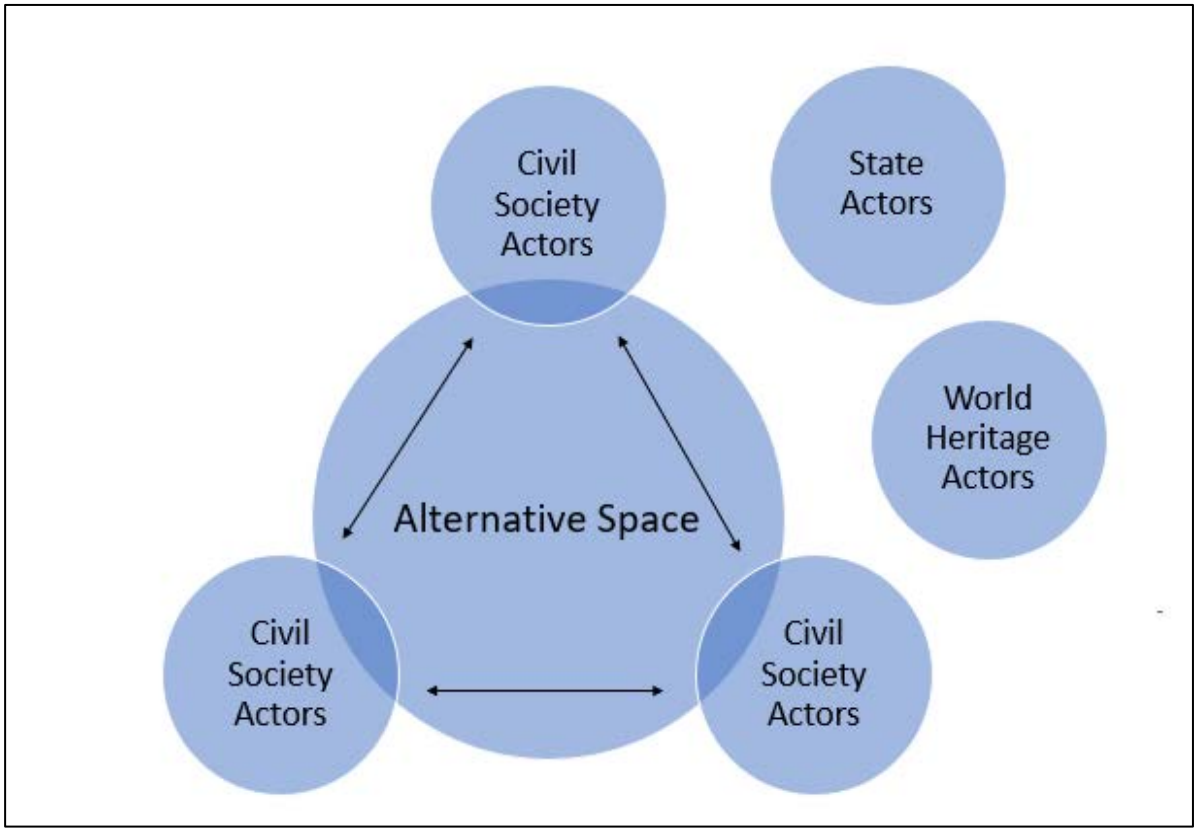

Figure 3.4 Alternative Space
Civil society actors co-dominate the discourse and crisis framing, through structural norms for collaboration (represented by arrows. This alternative space enables actors to enact agency and become 'crisis-makers' without state or World Heritage actor involvement - unless invited.

3.5 Analysis and Discussion

Until now, little has been known about how space affects how state and non-state actors frame and contest environmental issues at global meetings. My results show that international events are characterised by at least three types of space dynamics which affect how state and non-state actors use framing power to invoke or reject an environmental crisis. The first type is *state-dominated space*,

whereby a discussion of the framing of the In-Danger list takes place as part of the formal proceedings of a meeting. In the second type, the use of space by a non-state actor at a Side Event highlights how in *shared space*, actors use emotion as well as discourse to change framing and influence the audience: shifting the frame from a new climate related conservation program, for example, to a climate crisis that is existential. Finally, in the third type, non-state actors create *alternative space,* where states have limited power, and collective NGO networks and alternative reporting enable NGOs to improve their ability to independently frame crises. These three types of spatial dynamics have important implications for our understanding and practice of crisis-framing in environmental governance, as I elaborate below.

This ethnographic account also shows that while framing and contesting crisis is a strategy used by both state and non-state actors, these framing moments are contingent upon the spaces in which they occur. The findings first emphasize that within a policy venue, there can exist many different spaces with their own power dynamics, presenting opportunities and constraints for actors to frame issues. They also demonstrate how framing occurs as performative processes embedded in space; whereby space is constructed through interrelations between actors that are infused with power dynamics of both structure and agency (for descriptions see Figure 3.2-3.4). I confirm a dynamic relationship between space and actor crisis-framing in each of these spaces.

These findings also expand on the recent focus on the relational in framing research. New research suggests that while particular frames can have different effects, it is not just frames that impact people's perceptions. The effectiveness of frames is also highly influenced by social identities, communication techniques and messengers (Hornsey & Fielding, 2017). Adding a spatial component to this list extends the relational aspect to framing to include the relational spaces in which these framing moments occur across policy venues. Framing does not take place upon a blank canvass, so to speak. Three examples are particularly instructive in delineating the effect of different spaces on struggles over crisis:

1. **State space and curated consensus:** In state-dominated space, state actors expressed divergent views, and conclusions of the discussion were limited due to the need for a consensus, while the views of non-state actors were restricted to 2 minutes and excluded from decision-making. There was little room for non-state actor strategies to influence crisis-framing.
2. **Shared space and contested crisis frames:** In shared space, non-state actors exerted agency over space to shape alternative crisis-frames.

3. **Alternative space for marginalised crisis-makers:** In alternative space, marginalised actors used new space to create new frames. Marginalised crisis-makers created alternative spaces where they held more power, so they could be more effective at presenting counter-narratives and alternative framings, effectively creating their own space for expression of their own knowledge, perspectives, and concerns.

Inclusion of such a multiplicity of spaces in which framing occurs may help us create a more dynamic theory of framing (as called for by van Hulst & Yanow, 2016). I encourage this relational aspect to be examined in further research. Emerging examples of these alternative spaces include 'climate spaces' at the World Social Forum, for example, which are open spaces created to allow for more diversity, inclusion and justice, enabling a plurality of perspectives in international arenas (Buckley, 2018).

Further, while it is clear to see how space has affected crisis-framing from my account, how space affects outcomes, such as policy change, is less obvious. There have been few attempts to track how policy change emerges over time because of multiple framing attempts. For example, I found that in shared spaces and alternative spaces, marginalised voices had room to speak. Yet shared and alternative spaces were not obtaining as many meaningful direct outcomes in terms of decision-making and policy change. However, it does not mean there is no effect – only that the effects are formative, occurring in informal spaces, and may have influence in terms of pressure over time – challenging the narrative of the state, making the state's frames more vulnerable to critique. Another nuance making outcomes difficult to track occurs when internal tensions emerge between different crisis-makers and their frames, for example as already seen in climate emergency frames be used differently by activists compared with the government in New Zealand (Cretney & Nissen, 2022).

I therefore encourage more research effort in understanding the spatial and temporal dimensions of crisis-framing in policy and governance scholarship, to assist marginalised voices in reclaiming decision-making space. Indeed, while use of space has been studied as an outcome of governance, especially urban governance, less is known about the reverse, that is how spatial considerations function within governance and what their effects are. Important recent work is showing the informal ways in which actors strategise to claim more space or strengthen their position in existing institutions (Suiseeya & Zanotti, 2019; Witter et al., 2015). Indeed, when discussing the role of space in politics, Juris highlights 'how contemporary ideological struggles are increasingly waged through battles over organisational process and form' (2005, p. 255). The transformational possibilities of informal alternative and shared spaces within a policy venue are a critically important avenue for further research.

Framing theory and research have typically prioritised discourse and the categorisation of the 'frames' of an issue, with less attention paid to the actors (especially marginalised) doing the framing, or the policy venues and spaces within them, where framing contests take place (Carragee & Roefs, 2004; M. van Hulst & Yanow, 2016). While space has become a developed (albeit debated) concept in human geography, it has rarely been explicitly linked to the ability of marginalised actors to frame issues within a policy venue (there are some exceptions, see Godsäter, 2015). In undertaking such research, I therefore recommend including non-discursive elements such as emotions and affect in persuasion (Åhäll, 2018), and how 'pairing of certain emotions with particular ideas or events shapes the way in which one interprets and responds to those events' (Nabi, 2003, p.227).

3.6 Conclusion

In complex environmental governance regimes, like World Heritage, the power to frame certain issues as crises is an important influence on government policies and, ultimately, outcomes. This spatial and ethnographic exploration of the 2019 World Heritage meeting demonstrates how international events encompass a multiplicity of relational space dynamics whereby all actors can become 'crisis-takers' and/or 'crisis-makers'. The analysis suggests that to better understand how framing occurs in policy venues, and how marginalised voices can become empowered, more attention needs to be paid to the spaces where framing contests occur, and how these spaces affect the ability of actors to frame issues. If we want to understand who influences a crisis and how, then we must move beyond 'ledger politics' (Witter et al., 2015) or focusing only on outcomes, to look at how framing occurs in space as an ongoing, meaning-making, relational process.

4 CRISIS FRAMING MECHANISMS: MULTISCALE PERSPECTIVES ON THE CLIMATE-IMPACTED GREAT BARRIER REEF IN-DANGER LISTING

Publication: **McHugh, L.H.,** Lemos, M.C. and Morrison, T.H. (in progress) Potential and pitfalls of climate crisis framing mechanisms: listing the Great Barrier Reef as an 'In-Danger' World Heritage site. For submission to a special issue on heritage in *World Development*, October 2023.

Contribution: I developed the research question for this chapter, undertook data collection, analysis, and wrote the chapter. Tiffany Morrison provided advice on the research question, methodological approach, analysis, and editorial support. Maria Carmen Lemos provided advice on the research question, theoretical approach, structure, and editorial support. Chris Margules and Michele Barnes provided editorial support.

Abstract

Crisis framing as a response to climate change is on the rise. Hundreds of governments and influential non-state actors across the world have now advocated and supported climate emergency declarations. The UNESCO In-Danger list has emerged as one potential place-specific form of climate crisis framing. Since the mass coral bleaching of 2016-2017, many experts have argued that the World Heritage Committee should add the Great Barrier Reef to the In-Danger list on climate grounds. However, there are also influential actors who do not support the In-Danger listing, highlighting that 'endangerment' of the Great Barrier Reef is a controversial and potentially counterproductive form of climate crisis framing. Crisis framing theory highlights that actors will have multiple responses to a crisis, depending on whether they construct the event as a crisis or not and whether they perceive it as a political opportunity or threat. However, this understanding has been based on a small number of relatively discrete case studies outside of the climate and environment arena. Scholars are yet to explore crisis framing in multisectoral and multiscale governance settings like the World Heritage system. This lack of empirical testing is problematic, because as crisis frames continue to rise in response to climate-impacted ecosystems, their potential and pitfalls as a formal governance mechanism remains unclear. To address this gap, I conducted 34 in-depth interviews with key actors engaged at multiple scales in the debate over a potential Great Barrier Reef In-Danger listing. Participants shared concerns about the Great Barrier Reef's In-Danger listing, but also believed there were opportunities. Perceptions aligned around two themes: appropriate and fair use of the governance mechanism, and the impact of the messaging on public and political action. These perspectives and themes underscore the need to develop more nuance in understanding, anticipating, and managing actor interpretations of crisis by considering wider system and network governance effects.

4.1 Introduction

Although there has been a great deal of debate and scientific inquiry about the communication of fear versus positive messaging around climate change and its impact on individual motivation and efficacy (Hornsey & Fielding, 2016; Martel-morin & Lachapelle, 2022), there has been less consideration of how individuals perceive climate crisis frames. Actors often use a crisis or emergency frame to raise public awareness and promote urgent and substantial policy change. Yet there is no simple answer to whether crisis framing will be supportive of positive shifts in governance and policy; and little is known about how different political actors will respond (McHugh et al., 2021; Nohrstedt et al., 2021) (Chapter 2). Current frameworks to understand crisis framing have focused on national government level responses, however, environmental governance systems are often multi-level and polycentric, therefore it is important that more is known about how other actors perceive crisis framing, given they also have influence on the system (Carmenta et al., 2017). To better understand perceptions of crisis framing as a governance mechanism, I undertook a case study of the proposed In-Danger listing of the climate-impacted Great Barrier Reef World Heritage site, in which the proposed In-Danger listing currently invokes a climate crisis frame (UNESCO, 2023). I undertook 34 in-depth interviews with key actors (who I define as 'engaged parties') to find out why some support and others do not support the Great Barrier Reef being added to the World Heritage In-Danger list. I then triangulated themes emerging from the interviews with themes emerging from previously collected participant observation data and document review (Chapter Three).

The aims of this chapter are threefold; first, to test the Crisis Framing Policy Pathways Framework (McHugh et al., 2021) which explains multiple pathways through which actors may perceive crisis framing. Second, to close the gap in our empirical understanding of the reasons why actors support, or do not support, an In-Danger listing of the Great Barrier Reef. Currently, there is wide debate in the media and in scientific journals about the In-Danger listing, but no systematic or empirical analysis of actor perspectives within the governance system, whose informed views are relevant given that the In-Danger listing of the Great Barrier Reef will ultimately affect their roles in protecting the system. And last, to provide some reflection on the anticipated potential benefits and potential pitfalls of the In-Danger listing, namely, relating to what kind of governance effects actors perceive it to bring. The overall purpose in highlighting these issues is to assist decision-makers, managers and other key actors develop a better understanding of what issues to anticipate if the Great Barrier Reef is ultimately added to the In-Danger list. The chapter proceeds as follows. First, I explain the 'Crisis Framing Policy Pathways Framework' and how it will be adapted for testing in this case. Then I highlight how

participant responses aligned with the framework, and finally I discuss a new modified framework that emerged and areas for future research.

4.2 Emergence of crisis frames in conservation policy

Conservation science has long used crisis frames to focus policy attention and action – predominantly through threatened conservation listings (Lane & Mcdonald, 2002; Meffe, 2001; UNESCO, 2016). Threatened listings – formal lists that identify what is under threat and how significant the threat is – have been a prominent feature of modern conservation policy (Czech et al., 2000; Desilvey & Harrison, 2020; Harrison, 2010; May, 2020; Morrison et al., 2020). As modern conservation emerged in the 1950s and 1960s, governments enacted legislation to protect whole ecosystems and specific species (Cameron & Rössler, 2013). To answer the fundamental question of what needed to be protected, and what was facing imminent threat, crisis listings were developed to identify what was under critical threat and needed more protection. Some of the first and long lasting of these crisis lists include endangered species lists under the United States Endangered Species Act 1973; the 1964 IUCN Red List; and the In-Danger list under UNESCO's World Heritage Convention (Bridgewater and Kim 2021). All of the listings effectively invoke crisis frames in order to garner attention and assistance.

Threatened conservation listings provide important insight into crisis-framing at the science-policy interface, as they combine processes that involve scientific information, assessment, and monitoring, alongside the social and political dynamics of policy and values-based decision-making. The ideal function of these listings is that they promote or trigger protective conservation policy, however, in practice they must function within institutional contexts that often face interest group pressure, bureaucratic delay, and politicisation of decision-making (Morrison et al., 2020). As a consequence, dissatsified actors have also begun to develop new crisis frames, such as the IUCN World Heritage Outlook, to remediate the inconsistent effectiveness of threatened listings as a science-policy interface governance tool. While much attention has been devoted to the inconsistent use of such tools (Ando, 1999; Epstein, 2006; Hettiarachchi, Morrison, & McAlpine, 2015; Morrison, 2017; Taylor, Suckling, & Rachlinski, 2005), less is known about how key actors anticipate the costs and benefits of a crisis frame before a decision to declare a crisis is made. Given the variation of effects and outcomes that a crisis frame can have, understanding how key actors anticipate costs and benefits is key to assisting decision-makers, managers and other key actors develop a better understanding of how to plan for the political and policy aftermath of a crisis declaration.

One critical example of crisis framing is the proposed listing of the Great Barrier Reef on UNESCO's World Heritage In-Danger list, where its inscription has been debated and reported in national and international media (Foley, 2022; Paul, 2022; Readfearn, 2022) and in the scientific community (Morrison, 2021). The GBR's best-practice governance system is known for its polycentric structure that has evolved since 1975 in response to strong national (Australian Federal Government) and state (Queensland Government) law, international oversight (UNESCO) and effective public participation, as evidenced by a diversity of multi-actor, multilevel relationships involving joint rules, formal and informal partnerships, joint projects, and knowledge sharing (Morrison et al 2023; Day, 2017; Olsson et al., 2008) . In July 2021, the Great Barrier Reef was recommended by UNESCO to be added to the World Heritage In-Danger list due to the severity of climate impacts and 'insufficient progress' of the Australian government's actions to address other stressors such as water quality and land management (UNESCO, 2021). The In-Danger listing is thus a crisis-framing mechanism of the World Heritage Convention. While the intention of the frame is to improve the management of World Heritage sites under immediate threat, many actors, including consecutive Australian governments have resisted the In-Danger list (Morrison et al., 2020). While much has been written about such resistance from a global perspective (Bertacchini et al. 2016; Morrison et al. 2020; Brumann 2021), little is known about how engaged actors perceive the potential and pitfalls of the In-Danger listing for the polycentric governance of the Great Barrier Reef.

4.3 Crisis Framing Policy Pathways Framework

Here I test the 'Crisis Policy Pathways Framework' developed by McHugh, Lemos, & Morrison (2021) with a focus on the framework's utility in understanding climate crisis framing in multisectoral and multiscale governance settings. As discussed above, the framework was originally developed from predominately national government cases outside of the climate and environment arena, therefore, it is yet to be tested in a polycentric climate and environment governance setting. The proposed World Heritage In-Danger listing of the climate impacted Great Barrier Reef thus presents an ideal test-case.

In the original framework there are four common pathways for emergency framing (Figure 4.1) with the following explanation for each pathway:

1. Actors perceive the emergency as an opportunity for political and policy change and seek to focus blame and change the status quo. Actors frame treatment policy as the solution to reduce political pressure and for policy to address the underlying causes of climate events.

2. Actors perceive the emergency as a threat to political or policy preferences and seek to diffuse blame and defend the status quo. Actors may frame placebo policy as a solution to reduce political pressure while maintaining their own policy preferences.

3. Actors do not perceive a current emergency but anticipate risk in the future. Political blame may be limited to enable bi-partisan approaches to policy change. Actors seek risk-based policy change to mitigate future risk.

4. Actors do not perceive any emergency and do not seek to lay political blame or change policy. Framing supports the status quo and no policy change.

I hypothesised that these pathways would also logically apply to crisis framing on the climate-impacted Great Barrier Reef (Figure 4.2).

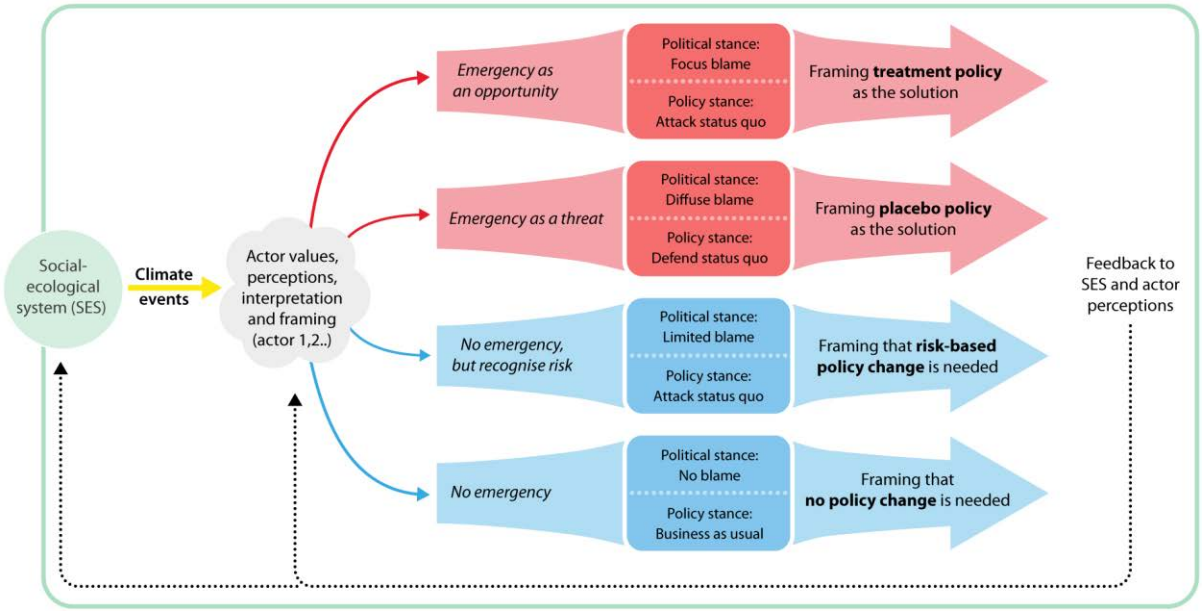

Figure 4.1 Crisis Framing Policy Pathways Framework (McHugh et al 2021)
The original framework shows the social construction of climate emergency within a social–ecological system. In this framework actors interpret climate change events within social–ecological systems. Interpretations, in turn, are affected by actor interests, identity, perception, and framing. Policy responses to climate event framing then feed back into the social–ecological system, influencing ecological states via policy outcomes and social interpretations.

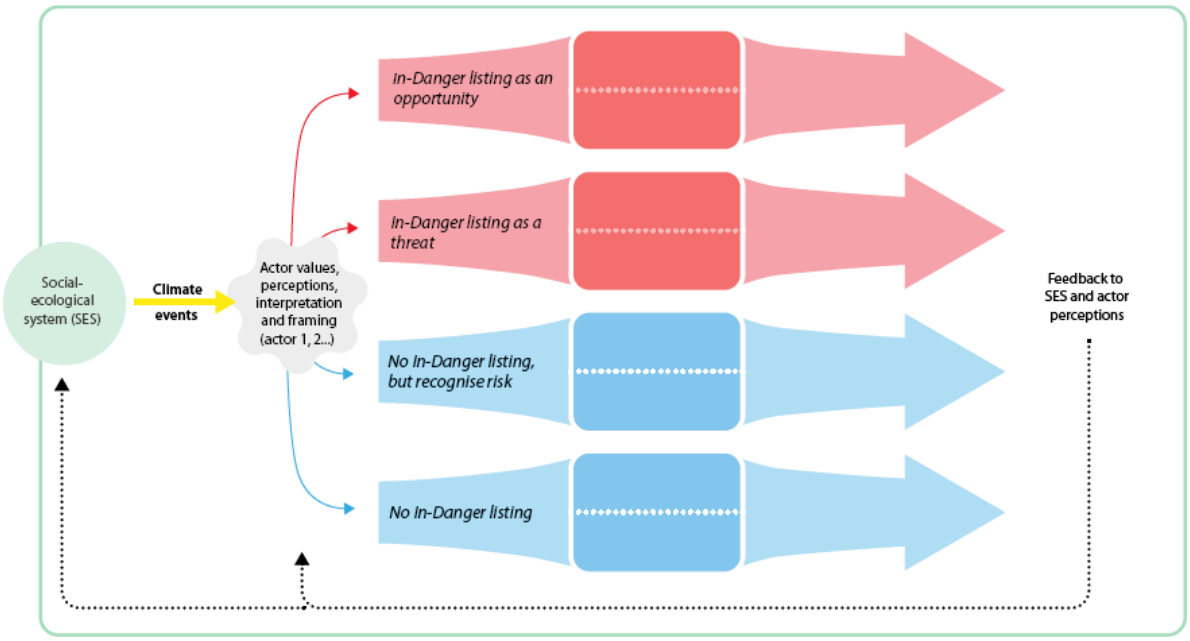

Figure 4.2 Hypothesised In-Danger Crisis Framing Policy Pathways Framework
In this chapter, I begin to test the utility of the framework for understanding the In-Danger listing crisis mechanism.

4.4 Method

To test the 'Crisis Framing Policy Pathways Framework', purposeful sampling was used to ascertain the significant actors (organisations and individuals) who can be considered as 'engaged parties' in the Great Barrier Reef In-Danger listing debate. Please note that I deliberately do not use the term stakeholder here, because while ISO standards define stakeholders as 'interested parties…that can affect, be affected by or perceive itself to be affected by a decision' (NQA, 2016), some actors engaged in the GBR arena do not consider themselves to be stakeholders. For example, management and government actors who work with stakeholders consider themselves separate to stakeholders, although they would typically be included in stakeholder definitions. Stakeholder definitions can also exclude scientists and other experts who may have a relationship to the target (whereby target refers to the Great Barrier Reef) but through knowledge, rather than direct activity. Recent research has also sought to differentiate 'stakeholders' with 'rightsholders' further indicating that stakeholder terminology is limited when considering actors within wider-governance systems (Nursey-bray et al., 2019). The term 'engaged parties' thus aims to reflect the wide range of key actors relevant to the GBR, across scales and sectors.

The Great Barrier Reef is governed according to a multi-sectoral, multi-scale and therefore polycentric regime with a range of actors engaged to different degrees across a variety of reef issues (Morrison et al. 2023). I defined 'engaged parties' in the Great Barrier Reef as actors with one of the following characteristics: engagement in activities that affect or are affected by the Reef; expert or specialised knowledge of the Reef; or have Reef related decision-making and policymaking capabilities. Note, this was not intended to be a sample of public opinion. The sampling strategy was purposive, as I sought to represent the diverse perspectives, interests, and experiences of engaged parties. I therefore identified relevant 'engaged parties' across local, regional, national, and international scales who were engaged in reef issues through their involvement in specialised knowledge, livelihoods, or governance participation (Table 4.1). I stratified the selection to ensure a mix of local, regional, national, and international actors (n=34).

Participants (n=34) were recruited using professional networks, snowballing and cold emailing organisations where there was no pre-existing connection. Semi-structured interviews were conducted in person or over video call, between August 2021 and March 2022. Interviews were recorded and transcribed. Participants were asked the following question 'In July 2021 UNESCO recommended the Great Barrier Reef be listed as an 'In-Danger' World Heritage site. Do you think the Great Barrier Reef should be added to the World Heritage In-Danger list? Why or why not?' Using a grounded theoretical approach, participant responses were inductively thematically coded to allow themes to emerge from the data. Emergent themes were then triangulated with media reporting on the issue (Yin, 2014). These responses and themes allowed me to develop new insights into the 'Crisis Policy Pathways Framework'.

Table 4.1 Engaged parties in the Great Barrier Reef

Types of Actors	Definition	Examples
Private Industry	Businesses with operations that impact or depend upon the GBR; peak body representatives of industries.	Mining; finance; tourism; agriculture.
Government	Government agencies with responsibilities relating to the GBR; local councils in proximity to the GBR.	Local councils; state government; national government.
Non-Government & Community	Community groups, not-for-profits and charities involved in reef issues.	Local community groups; natural resource management organisations; environmental NGOs.
Science	Biophysical and social researchers whose research includes reef issues working at	Coral reefs; climate change; regional development; tourism; engineering.

	government research agencies, universities, research centres.	

4.5 Results

The results revealed important insight into participant perceptions of the proposed In-Danger listing and subsequent political and policy pathways.

4.5.1 Participant perceptions of the proposed In-Danger listing

Participant answers revealed a wide range of reasons for why they supported (Figure 4.3), were unsure (Figure 4.4) or did not support (Figure 4.5) the In-Danger listing. The three most common positives mentioned by participants were: that the In-Danger listing would pressure governments to reduce emissions and improve climate policy (9 mentions); the listing was recognition of the threat to the Reef (8 mentions); and that risk to tourism was overstated or could be managed (8 mentions) (Figure 4.3). The next most common reasons (5 mentions) were: more funding or investment; it would be a wake-up call or call to action; and that it would improve action/responses for the Reef. Some participants were unsure and gave reasons such as they did not know enough about the meaning of the listing (3 mentions); whether it would increase pressure (2 mentions) or what its effect would be (2 mentions) (Figure 4.4). The most prevalent reason against the listing was that the Reef was not being listed fairly, as other sites are also affected by climate change but not listed, indicative that UNSECO's policy was inconsistent (4 mentions). The next most common reasons (3 mentions) were: concern it would harm the tourism industry; Australia was already doing enough to protect the Reef; people would give up trying to save the Reef, thinking it was too late; and that it would reduce visitation and therefore less people would care about protecting it (Figure 4.5).

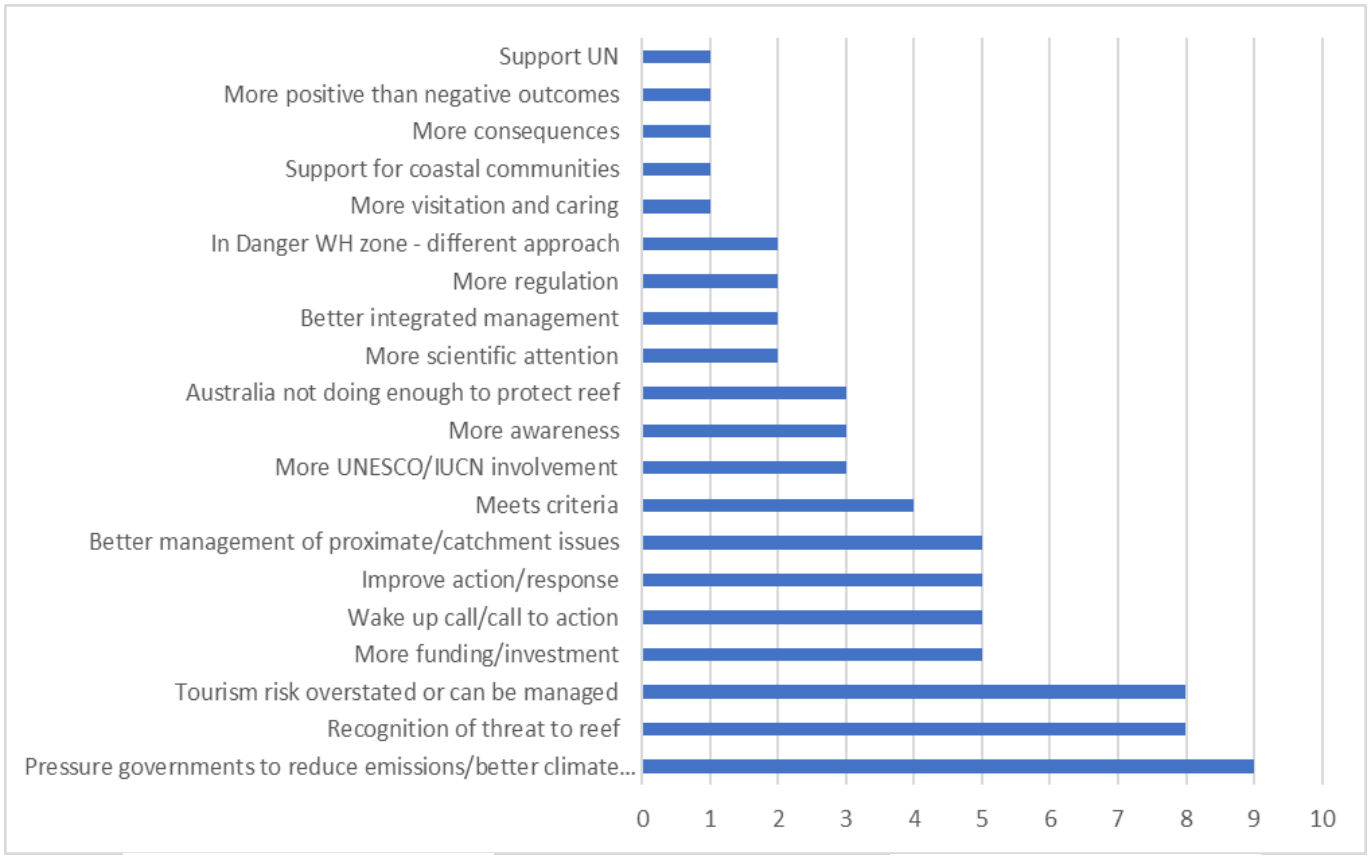

Figure 4.3 Anticipated positives of In-Danger listing

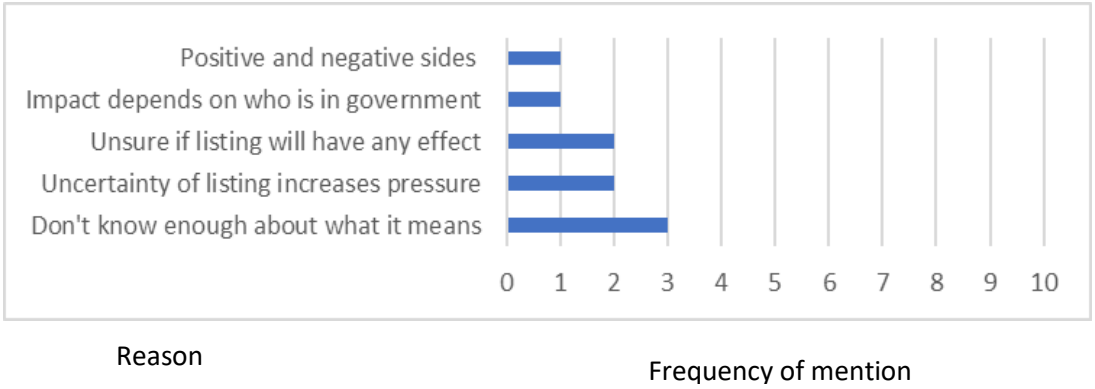

Figure 4.4 Uncertain about In-Danger listing

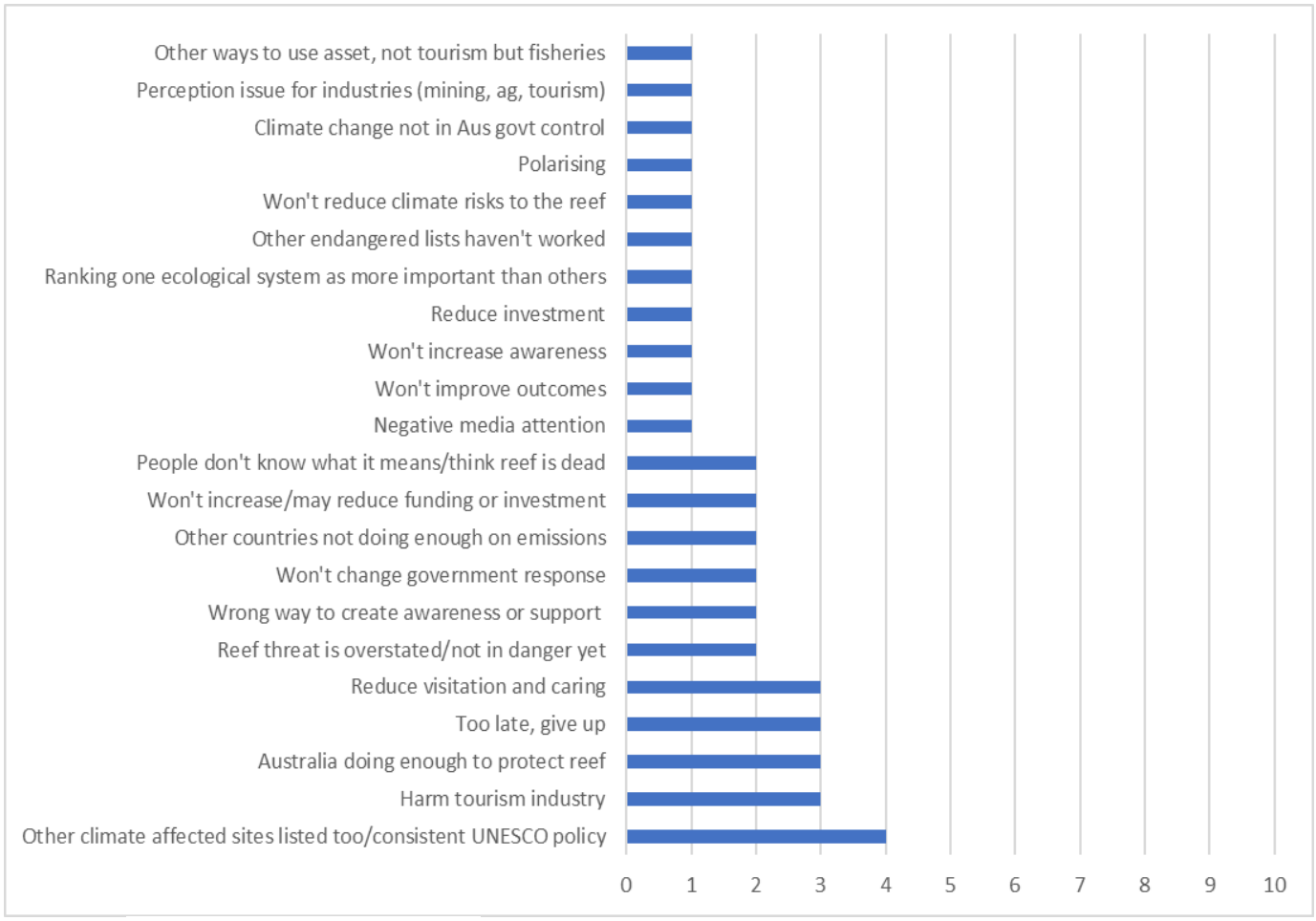

Figure 4.5 Anticipated pitfalls of an In-Danger listing

4.5.2 Dimensions of political and policy pathways

Participant responses were thematically coded using a grounded theoretical approach revealing a difference of perspectives around two key dimensions relating to the political and policy pathways of crisis framing.

Dimension One: Impact of messaging: public and political interpretations and predicted responses

Many participant responses related to anticipating how the public and politicians would interpret the In-Danger listing, and how they expected them to behave as a result. For those not in support of the In-Danger listing, they highlighted undesirable messaging to the public and politicians – that the In-Danger listing would signal that the Reef was dead or too late to save. This would lead to reduced public visitation, and lower political interest in protecting the Great Barrier Reef with flow in effects of less investment from governments and other actors. Harmful effects on tourism industry were also

cited, as the public will interpret negative media reporting as the Reef is dead or no longer worth visiting.

For those in support of the In-Danger listing, they anticipated that the listing would increase political pressure on governments to reduce carbon emissions and improve climate policy. Those in support of the listing believed that potential harm to the tourism industry was overstated, and that negative public reactions could be managed through messaging. Participants also cited improved management and regulation of proximate issues as governments would need to comply with stricter standards and UNESCO oversight.

This theme was manifest in more recent media reporting on the In-Danger listing in Australia where similar arguments have been documented. For example, reporting of the Australian government's lobbying to the WHC related to Australia already doing enough to protect the Reef, that the international spotlight of an In-Danger listing would make it harder for governments to green-light more fossil fuel projects, (Readfearn, 2021), also that if added to the list, UNESCO would lose political leverage resulting in less political motivation to protect the Reef into the future (Hoegh-Guldberg & Bell-James, 2014), and that it would harm the tourism industry.

Dimension Two: Appropriate and fair use of the governance mechanism

The second theme that emerged from the thematic analysis was contention around the appropriate and fair use of the In-Danger listing as a governance mechanism. Participants in favour of the In-Danger listing of the Great Barrier Reef said that the mechanism is designed to raise awareness of urgent threats, and climate change is an urgent threat to the Great Barrier Reef that needs to be recognised. Some said the Great Barrier Reef meets the criteria of the listing. Others highlighted the 'wakeup call' role of the listing, as a means to stimulate more political action.

For those not in favour of the In-Danger listing, they disagreed with the application of the listing to the Great Barrier Reef because other sites also under climate threat were not also being added to the list. This inconsistency in UNESCO policy was seen as unfair and politically motivated, rather than a reflection of scientific classification. Furthermore, the listing was not reflective of Australia's best practice management of the Reef, given that ocean heating from climate change was out of the direct control of reef management.

This theme was manifest in more recent media reporting on the In-Danger listing in Australia where similar arguments have been documented. For example, the IUCN and UNESCO's representatives said the Reef 'unambiguously' met criteria for the In-Danger list (Readfearn, 2021), in contrast to the Australian government saying that Australia is being unfairly singled out, when other World Heritage

coral reef sites are also being affected (Hughes, Day, & Hoegh-Guldberg, 2021). And finally, scientists have said that World Heritage reform on climate change needs to include reforms that reduce the politicisation of WHC decisions and increase credibility, particularly around the use of the In-Danger listing (Marsh, Smith, & Terrill, 2023).

4.5.3 Uncertainty as an emergent pathway

In applying the Crisis Policy Pathway Framework to perspectives of the In-Danger listing of the Great Barrier Reef, I found that responses to In-Danger framing did fit within the framework (Table 4.2) with most participant answers falling within the 'crisis framing as opportunity' or 'crisis framing as threat' pathways. However, I also discovered a new pathway previously unrecognised in the framework, which was related to those who were unsure about the listing (Figure 4.6). This highlights that in real world settings, there are those who do not have a strong position either way about crisis framing, typically because they are unsure about the effect it may have, or they see both potential positives and negatives from the crisis frame and cannot decide. This indecision is also evidenced by experts who have changed their position on the In-Danger list over time (Hoegh-Guldberg & Bell-James, 2014; Hughes et al., 2021). The data revealed that uncertainty is an important pathway that is often hidden and may reflect the complexity of predicting the impact of crisis framing mechanisms in polycentric governance.

Table 4.2 Example of participant responses in the Crisis Framing Policy Pathways Framework

Crisis Framing Pathway	**Example statement**
In-Danger as an opportunity	'I totally agree that it should be listed, and there's just so many good reasons for it. We know that we have to protect the Reef, and we have to put the best protection and controls in the space. Having a UNESCO listing is going to prevent those inquiries for coal mining within catchment regions of GBR, like groundwater protection, all of those sorts of things... It'll just really just change the way we have to manage the space… Makes the federal and state government have to answer to someone else too.' Participant 11
In-Danger as a threat	'The one thing I think it will do is it will be yet one more piece of global negative media attention. And it will be one more massive problem for our tourism industry… No one will understand what that means. Really, sorry, they just won't… people will just perceive it as one more version of all the Reef is dead.' Participant 8

Unsure of In-Danger	'I can't decide. I think it's a very complicated, very, very complicated situation that has been reduced to facile simplicity by most people who have been quoted in the press' Participant 5
Not In-Danger	'I personally don't think it should be because I think what the Australian and Queensland government has been doing in terms of, articulating a plan, implementing a plan and reviewing a plan. And it's it's not just about having a plan. We're doing something about the Reef. But I've seen a lot of work that actually has spawned from having that plan and that action, and so forth. And I think, you know, it's a hard job to implement something like that. I think Australia is doing a pretty good job of doing it.' Participant 20
Not In-Danger but risk in future	'I don't think it should be added. And why is that? Mainly because I think, at this stage, what we are seeing is there has been some regeneration. Certainly, there's no doubt that there were some very significant coral bleaching events where we lost a lot of coral. But the story that's not told is, since we've been through that period, we have seen some regeneration. I don't believe that the Reefs not at risk. But I think the way that we're managing that risk is exceptionally good. So that's why I don't think it needs to be included at this point. That doesn't mean that in the future, it doesn't need to be included.' Participant 4

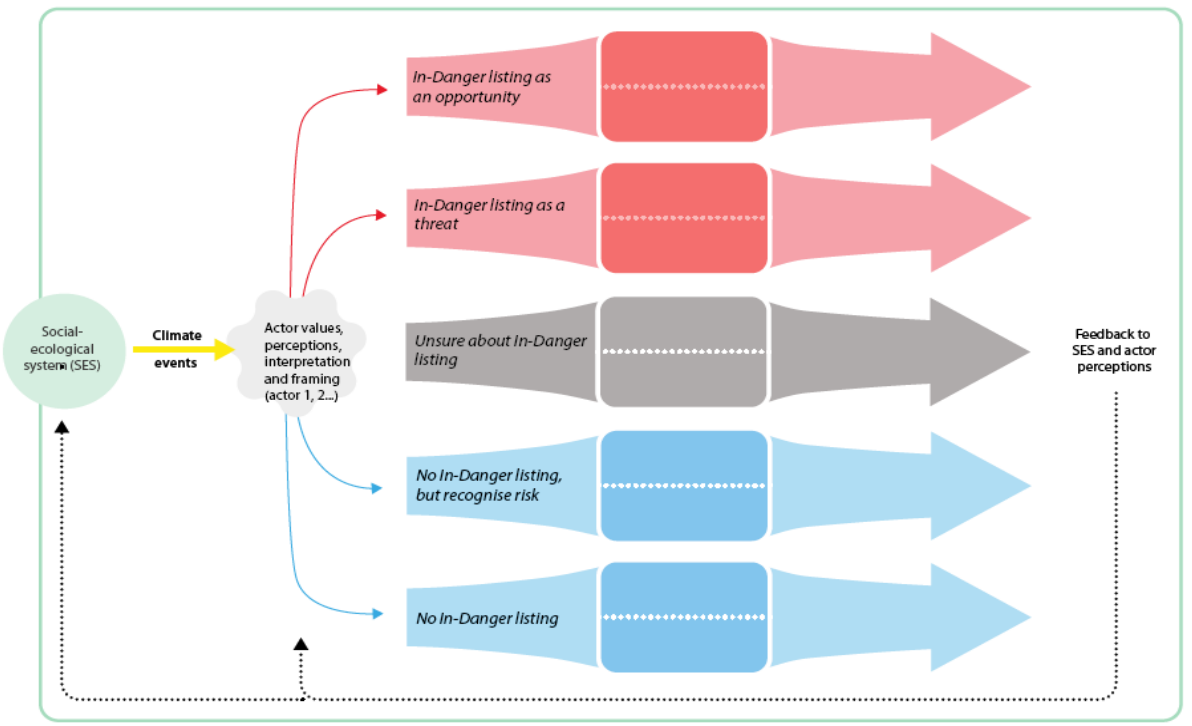

Figure 4.6 In-Danger Crisis Framing Policy Pathways Framework incorporating the pathway of uncertainty (adapted from McHugh et al 2021).

4.6 Discussion

Crisis framing theory highlights that actors will have multiple responses to a crisis, depending on whether they construct the event as a crisis or not and whether they perceive it as a political opportunity or threat. However, this understanding has been based on a small number of discrete case studies outside of the climate and environment arena. In analysing the debate over a potential Great Barrier Reef In-Danger listing, I found that participants shared concerns about the Great Barrier Reef's In-Danger listing, but also believed there were opportunities. Perceptions aligned around two dimensions of crisis framing: the impact of the messaging on public and political action, and the appropriate and fair use of the governance mechanism. I also found that there was also a new pathway previously unrecognised in the original framework, which was related to those who were unsure about the listing. These perspectives and pathways underscore the need to develop more nuance in understanding, anticipating, and managing actor interpretations of crisis to consider wider system and network governance effects, which were uncovered in participant responses. Here I elaborate on what that nuance might entail.

4.6.1 Grappling with uncertainty about crisis framing

As crisis framings are an increasingly used science-policy interface tool in conservation, it is important to understand why they are supported or contested as a governance mechanism. The Crisis Framing Policy Pathways Framework is useful for understanding actor responses to crisis framing by linking interpretation to perceived opportunity or threat. This study has focused on a wider range of actors than studied in developing the original framework. Using the Crisis Framing Policy Pathways Framework I found that most participant responses could be categorised as 'In-Danger as an opportunity', 'In-Danger as a threat', 'not In-Danger ', 'not In-Danger but risk in future'. However, I also found a fifth perception pathway of 'Unsure of In-Danger'. Participants who were unsure had assorted reasons, with most relating to being unsure about the meaning or effects of the listing. This previously unexplored response to crisis framing indicates that for some actors, including highly influential experts, it remains unclear whether crisis framing will generate desirable outcomes, and that even highly credentialed actors can be confused by the complexities of the In-Danger listing.

Another possible explanation for actors having an uncertain view of the In-Danger listing, is that the 'problem' itself is dynamic, which in turn leads to less fixed positions on perceived solutions. 'Wicked problems' have been defined in the literature as having dimensions of complexity, uncertainty, and contestation (Wanzenböck et al., 2020). In the case of the Great Barrier Reef, climate impacts have increased over time, but due to the complexity, uncertainty and contestation around these shifts,

actors may have difficulty relating this wicked problem to possible solutions such as the In-Danger list. Furthermore, as the pros and cons of the In-Danger list are widely debated in the media, this may create less clarity for actor understanding about the meaning and potential impact of the listing. Some participants also warned that the public would not know how to interpret an In-Danger listing and would assume the Reef is dead – indicating that more needs to be done by governments, managers and others to educate the public and stakeholders on the In-Danger list so that negative assumptions due to a lack of familiarity can be prevented.

Interesting similarities were found between the 'In-Danger as opportunity' perspective and previous empirical findings that climate emergency frames are seen by proponents as representing the truth, a signal to activate action and a responsibility (Cretney & Nissen, 2022). Many participants who supported the In-Danger listing agreed that the Great Barrier Reef met the criteria for the listing (truth), that it would pressure governments into more political action (signal to active action), and that the listing would increase protection of the Reef (responsibility). These similarities suggest there may be some generalisable rationale held by proponents of crisis framings across issues and countries, however a larger and more systematic study would be needed to explore this further.

I also identified reasons why the crisis framing is not supported – reasons that, until now, have not been empirically interrogated. The most common reasons against the crisis framing included: that the Reef was not being listed fairly, as other sites are also affected by climate change but not listed; concern it would harm the tourism industry; and concern that people would think it's too late to save and give up. Here we see that crisis framing is perceived to have negative effects across other sectors, such as tourism, as well as critique of the crisis framing mechanism itself. This gives us insight into why the mechanism remains controversial (and opposed by many) in relation to the Great Barrier Reef. Indeed, recent research into UNESCO climate policy highlights the ongoing difficulties of how the World Heritage system is grappling with climate change, namely whether the In-Danger list is the correct tool to be used in the case of climate impacts, especially given that climate change will likely disproportionately affect natural sites (Marsh et al., 2023).

4.6.2. Divergent perspectives on fairness and legitimacy

Navigating the global impact of climate change on World Heritage remains an unresolved challenge, however as this research indicates, actor perceptions of fairness need to be considered if it is to maintain legitimacy (Carmenta et al., 2017; Turner, Addison, & Arias, 2016). The thematic analysis highlighted that appropriate and fair use of the In-Danger list was an important consideration for actors, however, definitions diverged with some arguing the Great Barrier Reef meets the criteria of the In-Danger list, while others saying that the process of the In-Danger list for climate change needed

to be applied consistently across all impacted sites, not singling out the Great Barrier Reef. Increasing legitimacy is important for acceptance of governance mechanisms and the longevity of systems like World Heritage which are voluntary at the national level and could be opted out of, or ignored, if UNESCO loses trust and legitimacy. The 'democracy deficit' of the state-based United Nations system has been long critiqued (Dellmuth & Tallberg, 2015; Lord, Suozzi, & Taylor, 2010; Moravcsik, 2004). In relation to legitimacy and World Heritage, Affolder (2007) highlights how popularity and trust are crucial to legitimacy, 'Democracy problems are both real and imagined. The imagined problems are no less significant than the real ones as they represent threats to the popular legitimacy of the Convention which may be as significant as any threats to its normative legitimacy.' In this sense, it does not necessarily matter what the substance of the processes are, rather how they are subjectively perceived as legitimate by those involved in them. As some scholars argue, World Heritage processes have undergone a 'scientisation' whereby values such as Outstanding Universal Value have become defined through scientific evaluation processes. The value of scientific evaluation for legitimacy of World Heritage processes was echoed by participants who criticised that the In-Danger listing of the Reef was a 'political' decision by the WHC, but interestingly, those in favour of the listing saw the In-Danger list as recognition of the science showing the dire situation of the Reef. Processes of scientisation have begun to dominate high-level environmental governance systems, and while this may be viewed by some as enhancing legitimacy, the question is whether scientisation comes at a cost (Schmutz & Elliott, 2017). Science can measure very accurately the state of ecological decline and contributing factors – yet it cannot demand change – this is the function of institutions and should be an important consideration for any reform agenda.

4.7 Conclusion

The rise of crisis framing in response to climate change is growing. The UNESCO In-Danger list has emerged as a means of framing climate crises in specific locations, like the Great Barrier Reef. Crisis framing theory explores how actors respond to crises based on their interpretation and perception. Through interviews, key actors revealed mixed opinions on the Reef's In-Danger listing, emphasising fair governance and messaging's impact on public and political action. This underscores the necessity of nuanced comprehension and management of crisis interpretations within broader governance contexts. In the following chapter I expand on multisectoral and multiscale approaches to conservation by exploring actor perspectives of problem and solution frames to climate change in more detail.

5 FROM CLIMATE CRISIS TO SUSTAINABILITY TRANSFORMATION? PERSPECTIVES ON SOLUTIONS TO SUSTAIN THE GREAT BARRIER REEF

Publication: **McHugh, L.H.,** Song. A., Lemos, M.C., Margules, C., Barnes, M.L., and Morrison, T.H (in progress) A transformative shift for conservation governance? Perspectives on novel solutions to sustain a climate-impacted ecosystem. For submission to *npj Climate Action*, August 2023.

Contribution: I developed the research question for this chapter, undertook data collection, analysis, and wrote the chapter. Tiffany Morrison provided advice on the research question, methodological approach, analysis, and editorial support. Andrew Song provided methodological and editorial advice. Maria Carmen Lemos, Chris Margules and Michele Barnes provided advice on the research question, theoretical approach, structure, and editorial support.

Abstract

Crises, including extreme ecological and climatic events, can potentially function as a window of opportunity for transformative policy solutions. There is increasing convergence amongst policymakers and stakeholders that climate change is the biggest threat facing the Great Barrier Reef. However less is known if this convergence over problem definition extends to convergence over solutions. To understand crisis solution framing on the climate-impacted Great Barrier Reef I sought to extend the 'Crisis Policy Pathways Framework' by employing a wicked 'problem-solution space' concept. I undertook 34 interviews between 2021 to 2022 and used Q-method to understand different actor perspectives on solutions. Using this method, I ascertained six types of perspectives on solutions. Participant responses revealed low contestation, high complexity and low to medium uncertainty in diagnosing the problem of the climate crisis for the Great Barrier Reef. However, for the solutions, participants exhibited medium contestation, high complexity and medium to high uncertainty. While some actors are starting to think more creatively about what needs to be changed or radically transformed to sustain the Reef through the Anthropocene, there are still many pathways forward. Future research needs to focus on how governance systems can navigate the wicked range of climate solutions, each with their own costs, benefits, and risks.

5.1 Introduction

Crises, including extreme ecological and climatic events, can potentially act as a window of opportunity for transformative policy solutions. Many analysts have theorised and hoped that transitions and transformations will occur as a response to such crises – as events or situations pose a threat and expose the current ways of dealing with a problem as inadequate (Chaf & Gunderson, 2016; Hughes et al., 2019). Crises may also create more support for transitions to sustainability, including policies that seek to change the status-quo, such as emissions reduction policy that not only promotes low carbon energy, but also destabilises fossil fuel regimes (Geels, 2014; Morrison et al., 2022). Nonetheless, there is no single pathway to achieve transformations or transitions; stakeholders, policymakers, and the public may have divergent frames, discourses, risk perceptions, beliefs, and interests influencing their opinions about what needs to be done (if anything) (McHugh et al., 2021; Rosenthal et al., 2001). Indeed, crises have also been found to yield a range of other policy responses, including stability or non-transformative solutions (Datta et al., 2022; Nohrstedt, 2022; Kingdon, 1984).

Australia's Great Barrier Reef is a case in point. Coral reefs are some of the most susceptible ecosystems to climate change, with a projected catastrophic 70-90% decline globally at 1.5c of heating and over 99% decline at 2c, as global temperatures continue to rise (Hughes et al., 2017; IPCC, 2018). The Great Barrier Reef in Australia is the largest reef in the world and has experienced multiple mass bleaching events, increasing in frequency and severity in recent years (Hughes et al., 2017). In the aftermath of the most recent mass coral bleaching, a convergence of stakeholder views that climate change is the biggest threat to the Reef has finally emerged (Barnes et al., 2022; Curnock et al., 2019; Thiault et al., 2020). However, while actor convergence reduces contention about climate change and is therefore welcomed by reef managers and climate scientists alike, little is known about whether this convergence shapes the way forward – namely how it produces the policy solutions needed to overcome the climate change problem.

Understanding actor frames and discourses around problems and solutions is an emerging approach in sustainability science. Social knowledge and perspectives are becoming a valuable part of a transdisciplinary research agenda to improve conservation outcomes (Margules et al., 2020). Improving understanding of actor perspectives on problems and solutions is important for a number of reasons. It can aid in the design, implementation and prioritisation of actions in the context of complex systems change and multiple threats (Thiault et al., 2020). Nuanced understanding of actor perpectives is particularly useful when designing policy tools and governance arrangements that require legitimacy and buy-in from a wide range of stakeholders (Adger et al., 2005; Reed et al., 2020).

Perspectives on solutions also may be indicative of social acceptance – a co-determinant of policy performance (Carmenta et al., 2017). Finally, knowledge brokers can use this information to identify potential future conflicts or areas of consensus, which may assist navigation of messy science-policy interfaces (Arnott & Lemos, 2021; Cash et al., 2006).

To understand problem and solution framing on the climate-impacted Great Barrier Reef I deployed Q-method using a wicked 'problem-solution space' concept. The chapter proceeds as follows. I first briefly explain the 'problem-solution space' concept suggested by Wanzenbock et al. (2020) and how better characterisation of a problem and its solution can be helpful in navigating complex policy contexts. I then link this concept to broader transformation and transitions concepts, as a way to understand socio-technical and social-ecological change for sustainability – a growing multidisciplinary research area (Köhler et al., 2019; Morrison et al., 2022). I then explain how the Q-method was deployed in this instance, to understand actor perspectives across a range of possible solutions to protect the Great Barrier Reef. Finally, I assess the utility of the Wanzenbock's wicked 'problem-solution space' concept in extending the 'Crisis Policy Pathways Framework'. I conclude by providing recommendations to improve problem-solution alignment for transformative policy. My overall goal is to help policy makers and boundary organisations understand actor appetite and build legitimacy for transformative policy in order to more strategically navigate the challenge of the climate crisis for impacted ecosystems.

5.2 Characterising the 'problem-solution space' of wicked problems and grand challenges

Policymakers implementing 'mission-oriented innovation policy' – policy aimed at addressing grand social challenges like climate change, face roadblocks due to their wickedness. The problems are unique, characterised by core features of contestation, complexity and uncertainty to different degrees (Wanzenböck et al., 2020). However, less recognised is that solutions can also have dimensions of wickedness. Any mission-oriented innovation policy must thus enable policymakers and other actors a way to characterise both the problem and the solutions and choose the best strategy to support alignment of problems and solutions - so that problem-solving can be expediated.

The wicked problem-solution concept developed by Wanzenbock et al. (2020) usefully breaks down the 'wickedness' of problems and solutions into three dimensions: contestation, complexity, and uncertainty, which can range from high to low. Problems, for example, can be contested due to multiple framings, polarised stakeholder views, and normativity. Problems can also have various

degrees of institutional and situational complexity, as well as uncertainty due to knowledge gaps around cause and effect. If all three attributes are high, there is problem divergence. If they are low, there is problem convergence. For solutions, contestation can occur over which solution is the best. Complexity indicates solutions that need to have systemic impacts, and uncertainty can exist over effectiveness, feasibility, and undesirable impacts. If all three attributes are high, there is solution divergence. If they are low, there is solution convergence.

Based on this characterisation of the 'problem-solution space', Wanzenbock et al. (2020) prescribe different policy approaches and strategies. The Wanzenbock's wicked 'problem-solution space' concept is thus potentially a useful way of extending the 'Crisis Policy Pathways Framework' by providing insights into the wicked dimensions of solutions. To date, there are few empirical studies that test the utility of the Wanzenbock et al (2020) concepts, which I seek to do in this study. Furthermore, even less is known about how wicked problem-solutions spaces play out in complex polycentric governance contexts, such as the governance of the World Heritage listed Great Barrier Reef (Morrison 2017). Understanding how such wicked perspectives on solutions link to transformative change will be critical to governing all ecosystems through the Anthropocene.

5.3 Transformations and transitions to solve sustainability crises

Transformation and transitions towards sustainability are now widely discussed in the scientific community and in policy circles, particularly in relation to the climate crisis (IPCC, 2022). Sustainability transitions are societal-level responses to complex, systemic environmental problems and represent more sustainable modes of production and consumption of natural resources (Hansen & Coenen, 2015; Markard, Raven, & Truffer, 2012). Transformation is a debated concept, with a diversity of interpretations – for example, in economics, the transformation literature has been critiqued for focusing only on economic change, without social justice considerations (Feola, 2015). Emerging from resilience theory (Olsson, Galaz, & Boonstra, 2014; Scoones et al., 2020), transformation refers to a 'fundamental shift in human and environmental interactions and feedbacks' (Hölscher, Wittmayer, & Loorbach, 2018, p.1). Transformative change is sometimes defined in contrast to adaptation, where adaptive change is seen as 'changes to existing practices or behaviours that allow existing social–ecological system structures to absorb, accommodate or embrace change; and transformative actions as more fundamental changes that can alter dominant social–ecological relationships and contribute toward the creation of a new system and/or future' (Barnes et al., 2020, p. 824). Although adaptation is an important response to climate change, there are limits to adaptation (Berkhout & Dow, 2022)

with barriers including path-dependent institutions (Barnett et al., 2015). Some argue more radical, transformative changes will be needed to prevent large scale, irreversible loss from climate change, for example 'deep radical change' that represents 'solutions that tackle lock-in of exploitative and extractive systems' as described by Morrison et al. (2022, p.1104).

Transitions are in turn the theorised multi-level processes through which socio-technical and social-ecological transformation can occur – they are described as non-linear, dynamic interplays between niches (specific areas of radical innovations) and socio-technical regimes (system status-quo) within an exogenous landscape (Geels, 2014). The 'just transitions' discourse, initiated by trade unions, is based on the argument that social justice considerations are needed given the purposeful large scale change in labour relations, jobs and income distribution required to achieve net-zero economies (Galgóczi, 2020). While the concept of a just transition has become increasingly popular since the COP21 Paris Agreement (UNFCC, 2015), debates have mostly emphasised singular transition pathways, rather than how multiple transitions pathways might emerge in real world settings. In real world settings like the climate-impacted Great Barrier Reef, little is known about the range of transition pathways from the perspective of key actors in the polycentric governance system.

5.4 Evolving conservation and perspectives on the Great Barrier Reef

Despite the current gap in knowledge about future transition pathways, the Great Barrier Reef has actually undergone continuous transitional, and some argue, transformative change since the 1970s when modern conservation management was introduced. These phase shifts have reflected the evolution of governance and management of the Reef to meet perceived threats and improve social processes for better outcomes (Hughes et al., 2019). Large shifts include the 2004 re-zoning of reef to increase no-fish zones from 5% to 33% of the marine park. Another significant shift was the increased focus on the water quality of agriculture and mining catchments in the Reef Water Quality Protection Plan (Morrison 2017). Since increasing frequency and severity of mass coral bleaching events (1998, 2002, 2016, 2017, 2020 and 2022), actor perspectives have shifted again.

Recent studies of threat perceptions before and after the 2016 bleaching found that stakeholder threat perceptions have now converged on the fact that climate change is the most serious threat to the Reef (Thiault et al., 2020). Climate change is also considered the greatest threat to the Reef from a representative sample of the Australian public and tourists (Goldberg et al., 2016). Similarly, Curnock et al., (2019) found a shift in risk perceptions of tourists before mass bleaching in 2016 and afterwards in 2017, converging around climate change as the biggest threat. As a consequence, there has been

even more investment in a range of solutions to protect the Reef. For example, the Reef 2050 Long-term Sustainability Plan was designed to guide the adaptive management of the Reef, maintain its World Heritage Outstanding Universal Values, and coordinate integrated management (Commonwealth of Australia, 2015). More frequent coral bleaching events have also triggered new government investment in restoration and adaptation of corals, and increased community engagement and not-for-profit activity (Hamman, 2016; Lubell & Morrison, 2021).

However, recent research into governance actor responses to mass bleaching events also highlights how actors feel disempowered or ill-equipped to address coral bleaching due to climate change needing to be addressed at a global scale, with conflicting perspectives about local level resilience, systemic catchment issues, and global emissions reduction (Barnes et al., 2022). Indeed, while the need for a significant and urgent reduction in carbon emissions has been highlighted by scientists, UNESCO and the Great Barrier Reef Marine Park Authority, there is little detail about how emissions reduction transitions should occur. Despite some early development pathway scenarios for the Great Barrier Reef - including Australian national transition and global transformation (Bohensky et al., 2011) – there remains limited understanding of key stakeholder and practitioner perspectives on potential transition pathways for the Great Barrier Reef.

5.5 Methods

Q method combines qualitative and quantitative methodology and is typically used to understand diverse viewpoints about a subject (Watts & Stenner, 2005; Song, Chuenpagdee, & Jentoft, 2013; Zabala, Sandbrook, & Mukherjee, 2018). For this reason Q method is increasingly useful in conservation governance as a way to understand stakeholder views and identify areas of consensus or divergence (Amaruzaman et al., 2017; Carmenta et al., 2017; Forouzani et al., 2013). The benefit of the Q approach is that rather than asking about perspectives on discrete aspects of a subject, the analyst can explore how participants view all aspects of a subject in relation to each other – the completed Q-sort 'whole' is thus different to judging each of the parts individually. I therefore chose Q approach for understanding diverse perspectives on solutions to protect the Reef because a Q analysis can reveal not only what solutions are supported but also how they are supported in relation to one another. My reasoning was that policy preferences do not exist in a vacuum, but must be judged in the context of what is available or what other solutions could be better.

For a Q study, there are four phases of data collection and analysis (Cairns, 2012): 1. Statement drafting and selection 2. Interviews with a purposive sample of participants 3. Factors generated through quantitative statistical analysis 4. Factors used to guide qualitative description.

First, a Q sample is developed by reviewing the 'concourse', or the discourses around a topic. I developed the concourse by gathering statements of solutions to protect the Great Barrier Reef from the websites and reports of NGOs, peak industry bodies, government agencies, and natural resource managers. I also included international, national, and regional media reporting on the Great Barrier Reef and scientific research articles to capture multiple viewpoints and key debates. I then organised the statements to reflect different dimensions of the solution space. I used a structured matrix with the following dimensions to guide selection: issue, scale, sector, approach, innovation, knowledge, and instrument (Table 5.1). I simplified the statements but where possible retained their original expression for our final 31 statements (see Table 5.2 list of statements). The aim of the statement selection was to ensure all dimensions were represented, enabling participants a wide variety of solutions to select from. The sample of participants and procedure for interviews is the same as described in Chapter Four.

Table 5.1 Different dimensions of solutions proposed for the Great Barrier Reef (formulating statements used in the Q-sort Table 5.2)

Dimension	Explanation and Examples
Issue	Type of problem e.g. Water quality, climate change, marine park management
Scale	Scale of action e.g. personal, local, catchment, regional, national, international
Sector	Sector impacted e.g. agriculture, marine, fossil fuels, tourism, science, NGOs
Approach	Type of institutional approach e.g. Reef 2050 Plan, UNESCO monitoring
Innovation	Type of innovation e.g. carbon farming, geoengineering, assisted evolution
Knowledge	Type of knowledge production: e.g. citizen science, forecasting, modelling

The first part of the interview structure sought to confirm prior research findings on general agreement about climate change being the main threat to the Reef. I began with an open-ended question 'What is the biggest threat to the Reef?' followed by the Q-sort activity with the question 'What solutions to protect the Reef do you support?' and a final open-ended question on why they did or did not support the In-Danger listing of the Great Barrier Reef. Participants were asked to rank the solution statements from most to least support within the Q-sort columns and were encouraged to verbalise their views on the statements as they sorted them. Recorded interviews were then transcribed.

For the factor analysis of the Q-sorts, I then used Ken-Q Software for Principal Component Analysis (PCA) to extract eight factors and based on Eigenvalues, selected the six factors which explained the highest variance of the results (highest factor 35% to lowest factor 5%), with 70% cumulative variance

explained. Two factors explaining less than 5% of the data were excluded. I then coded the interview transcripts for each participant who significantly correlated with each factor to guide qualitative description.

Table 5.2 Solution statements and corresponding statement number

No.	Solution Statement
S1	Marine Park management efforts to improve practices of recreational users and tourists on the Reef (damage from anchors and human contact)
S2	Marine Park management efforts to reduce poaching in protected zones
S3	Culling of Crown of Thorns Starfish (a sea star that feeds on coral) to protect corals on reefs
S4	Artificial solutions for species at risk
S5	Regulation to reduce land clearing in GBR catchments
S6	Voluntary programs for farmers to improve water quality (e.g. voluntary accreditation, rebates for management advice)
S7	Market-based Reef Credits Scheme where farmers/landholders can earn income through actions to reduce run off
S8	Regulations on farmers/landholders and industry (mining, sewerage, aquaculture) to improve water quality
S9	Restoration and protection of wetlands, rivers and riparian areas
S10	Local-level action to reduce rubbish and plastics from urban areas entering GBR waters
S11	Local community action in planning, implementing and monitoring to protect the Great Barrier Reef
S12	Citizen science - participatory mapping and monitoring of the Reef
S13	Regional transition planning to shift to renewable energy and plan for the closure of fossil fuel industries: including support packages for workers and new job opportunities
S14	Coral restoration to replenish damaged reefs through assisted propagation or coral gardens
S15	Assisted coral adaptation to increasing sea temperatures (e.g. selective breeding and moving of heat-tolerant corals)
S16	Sun shield geoengineering – e.g. biodegradable surface films on the ocean to reflect heat
S17	UNESCO monitoring and evaluation of the GBR World Heritage site
S18	UNESCO listing of the GBR as an ‘In-Danger’ World Heritage site
S19	Integrated management system involving Federal and State Governments, GBRMPA
S20	Transition away from fossil fuels by Australian federal and state governments to reduce carbon emissions
S21	Educational campaigns to promote personal reduction of carbon footprint
S22	Environmental NGO campaigns to raise public awareness and media coverage about the threats facing the Reef
S23	A forecasting and modelling program to track and predict the condition of the Reef, including water quality and bleaching
S24	Coral bank – preservation of coral specimens in a repository to improve understanding of coral reefs
S25	Regular, consistent water quality testing of all six catchments to accurately measure the quality of the water on the Reef
S26	Indigenous Traditional Owner custodianship and reef co-management programs
S27	Less solutions are needed to protect the Reef
S28	Long-term planning with the Reef Long-Term Sustainability 2050 Plan
S29	Capacity building of Reef managers in disaster and resilience planning
S30	Carbon market for protection and restoration of mangroves, salt marshes and seagrass
S31	Habitat restoration (mangroves, seagrass, dunes)

5.6 Results

The analysis confirmed problem convergence but revealed diverse perspectives on solutions.

5.6.1 Convergence of perspectives on the problem

Climate change is the biggest threat to the Reef

Every participant identified climate change as the biggest threat to the Reef, with two participants nominating climate change alongside another threat – either water quality or plastic pollution. This result confirms past research finding converging views that climate change is now perceived to be the biggest threat to the Great Barrier Reef (Barnes et al., 2022; Curnock et al., 2019; Thiault et al., 2020).

5.6.2 Six perspectives on solutions to sustain the Reef

From the Q-sorts, I found six distinct statistically significant perspectives on solutions to protect the Reef (Table 5.3). The following descriptions of each perspective have been formulated from the quantitative Q-factors enriched from the qualitative answers and explanations from the participants who aligned with the factor.

Perspective One: Coral Adaptation and Technology Solutions

These actors believed that assisting coral to adapt to changing temperatures and threats like Crown of Thorns starfish are critical stop-gap measures given the urgency of climate change. More scientific knowledge, like the coral bank, and technological development are easier to influence and can bring immediate impact. Habitat restoration and climate transitions are important but will be slow, so more actions with direct impact are prioritised. Forecasting won't help direct actions to protect the Reef and land clearing regulations are not where change is most needed.

Perspective Two: Integrated Resource Governance Solutions

These actors believed that long-term planning and integrated management are a crucial component to drive action across all levels and include cross-sectoral stakeholders in the process. Forecasting and monitoring to assess the effectiveness of approaches is a priority. Regulation to address catchment issues is needed, along with other measures to improve water quality. National climate transitions are supported but are not direct or impactful to the Reef because of Australia's small contribution to global emissions. The In-Danger listing for the Reef is not political and does not reflect that the Reef is the best managed globally. Coral banks will not protect the Reef, and geoengineering options seem like an ineffective use of money and will bring risks.

Perspective Three: Ecosystem Health Solutions

These actors believed that improving catchment water quality and ecosystem restoration are critical to protecting the Reef and making it more resilient to climate impacts. Marine park issues such as

poaching are also important. Water quality is a core concern and regulations on industry and land users are going to be most effective. Too many resources go into planning, governance and research agencies rather than supporting tangible actions such as land rehabilitation. NGOs cause unnecessary fear and waste money that could be put to on-the-ground action. Educational campaigns to reduce personal carbon footprints are not seen as having impact. Geoengineering is seen as expensive, high maintenance and may have downsides.

Perspective Four: Market-led Climate Transition Solutions

These actors believed that long-term planning is needed to underpin all strategies to protect the Reef. A climate transition is needed but will only occur if people feel ownership of the problem and support change. Economic incentives and market-based approaches would be the most effective. Regulatory approaches can stir opposition from communities and resource-users, creating division. UNESCO and the In-Danger listing is the wrong way to get people on side, and people may think the Reef is a lost cause to try to protect.

Perspective Five: Regionally-led Climate Transition Solutions

These actors believed that climate transition that reduces Australia's emissions is needed, but crucial to the success of this shift is the provision of a secure future for communities with new opportunities beyond fossil fuels in the region. A mix of voluntary, regulatory, and market-based policies is important for protecting the Reef. Improving water quality of the catchments through reducing land clearing and restoring wetlands have the potential for significant benefit to the Reef. The Reef already has the best management practices globally and extensive monitoring, so UNESCO involvement is bureaucratic and will not lead to any more benefits to the Reef. Many NGO campaigns have not been balanced and the threats to the Reef are well known. Given the size of the Reef, experimental technologies would be too expensive to scale up and we don't know if they will work.

Perspective Six: Radical Systems Climate Transition Solutions

These actors believed that climate transition is needed to address carbon emissions, but it needs to be underpinned by broad political and social change to ensure communities and governments are making decisions to achieve social benefit (such as Indigenous custodianship) as well as environmental benefit. There is support for UNESCO and the In-Danger listing of the Reef, and environmental NGOs to push for system change by providing a 'wakeup call' to political actors and the public. Australia's actions can influence the global community's response to climate change. Regulation over land to improve water quality and habitat restoration is important. Proximate measures such as marine park management issues are not primary to addressing the climate threat. Educational campaigns about personal carbon footprint misplaces the onus for change on to individual action rather than systemic

industrial change. Geoengineering and technological solutions do not address the root cause nor are effective enough over a large scale and may also serve as an expensive distraction from the social and political change that is needed.

5.6.3 Comparing across the perspectives

Interestingly, three of the perspectives prioritised climate mitigation solutions relating to climate transitions, with some variation about the preferred mix of solutions to support these transitions (Radical Systems Climate Transition, Regionally Led Climate Transition, Market-Led Climate Transition*).* A summative radar chart shows all perspectives in relation to one another (Figure 5.1a), while a detailed set of radar charts (Figure 5.1b) shows how each perspective (colour) compares across all solutions with other perspectives (grey). Our small n-interview sample and Q-method could not produce a representative sample of each sector, however the presence of sector participants that aligned with each perspective may be indicative of broader trends (Table 5.3). Notable divergences occurred between the positions of science and industry – with 25% of industry and 0% of scientists taking the Coral Adaptation and Technology view and conversely, 80% of scientists and 0% of industry taking the Radical Systems Climate Transition view (Table 5.3). For government, 43% aligned with the Regionally-led Climate Transition; 28% with Integrated Resource Governance; and 14% with the Radical Systems Climate Transition. NGO positions were concentrated in the Radical Systems Climate Transition (46%), with some across most views (8% for each: Market-led Climate Transition, Ecosystem Health Action, Integrated Resource Governance, Coral Adaptation and Technology). Notably, no NGO participant aligned with the Regionally-led Climate Transition perspective.

Table 5.3 Six perspectives on solutions - summary

Perspective	Solutions most supported (statement number)	Solutions least supported	Primary supporters (% of participants)
One: Coral adaptation and technology	1. Assisted coral adaptation to increasing sea temperatures (e.g. selective breeding and moving of heat-tolerant corals) (S15) 2. Culling of Crown of Thorns Starfish (a sea star that feeds on coral) to protect corals on reefs (S3) 3. Coral bank – preservation of coral specimens in a repository to improve understanding of coral reefs (S24) 4. Habitat restoration (mangroves, seagrass, dunes) (S31)	1. Less solutions are needed to protect the Reef (S27) 2. Regulation to reduce land clearing in GBR catchments (S5) 3. A forecasting and modelling program to track and predict the condition of the Reef, including water quality and bleaching (S23) 4. Capacity building of Reef managers in disaster and resilience planning (S29)	Industry (25%) NGO (8%)
Two: Integrated resource governance	1. Long-term planning with the Reef Long-Term Sustainability 2050 Plan (S28) 2. Regulation to reduce land clearing in GBR catchments (S5) 3. Integrated management system involving Federal and State Governments, GBRMPA (S19)	1. UNESCO listing of the GBR as an 'In-Danger' World Heritage site (S18) 2. Sun shield geoengineering – e.g. biodegradable surface films on the ocean to reflect heat (S16) 3. Less solutions are needed to protect the Reef (S27)	Government (28%) Industry (12%) NGO (8%)

	4. A forecasting and modelling program to track and predict the condition of the Reef, including water quality and bleaching (S23)	4. Coral bank – preservation of coral specimens in a repository to improve understanding of coral reefs (S24)	
Three: Ecosystem health action	1. Regulations on farmers/landholders and industry (mining, sewage, aquaculture) to improve water quality (S8) 2. Restoration and protection of wetlands, rivers and riparian areas (S5) 3. Habitat restoration (mangroves, seagrass, dunes) (S31) 4. Marine Park management efforts to reduce poaching in protected zones (S2)	1. Sun shield geoengineering – e.g. biodegradable surface films on the ocean to reflect heat (S16) 2. Less solutions are needed to protect the Reef (S27) 3. Environmental NGO campaigns to raise public awareness and media coverage about the threats facing the Reef (S22) 4. Educational campaigns to promote personal reduction of carbon footprint (S22)	Industry (12%) NGO (8%)
Four: Market-led climate transition	1. Long-term planning with the Reef Long-Term Sustainability 2050 Plan (S28) 2. Regional transition planning to shift to renewable energy and plan for the closure of fossil fuel industries: including support packages for workers and new job opportunities (S13) 3. Market-based Reef Credits Scheme where farmers/landholders can earn income through actions to reduce run off (S7) 5. Transition away from fossil fuels by Australian federal and state governments to reduce carbon emissions (S20)	1. UNESCO monitoring and evaluation of the GBR World Heritage site (S17) 2. Regulation to reduce land clearing in GBR catchments (S5) 3. Less solutions are needed to protect the Reef (S27) 5. UNESCO listing of the GBR as an 'In-Danger' World Heritage site (S18)	Industry (12%) NGO (8%)
Five: Regionally-led climate transition	1. Transition away from fossil fuels by Australian federal and state governments to reduce carbon emissions (S20) 2. Regional transition planning to shift to renewable energy and plan for the closure of fossil fuel industries: including support packages for workers and new job opportunities (S13) 3. Regulation to reduce land clearing in GBR catchments (S5) 4. Restoration and protection of wetlands, rivers and riparian areas (S9)	1. UNESCO monitoring and evaluation of the GBR World Heritage site (S17) 2. Less solutions are needed to protect the Reef (S27) 3. Sun shield geoengineering – e.g. biodegradable surface films on the ocean to reflect heat (S16) 4. Environmental NGO campaigns to raise public awareness and media coverage about the threats facing the Reef (S22)	Government (43%) Industry (12%)
Six: Radical systems climate transition	1. Transition away from fossil fuels by Australian federal and state governments to reduce carbon emissions (S20) 2. Regional transition planning to shift to renewable energy and plan for the closure of fossil fuel industries: including support packages for workers and new job opportunities (S13) 3. Indigenous Traditional Owner custodianship and reef co-management programs (S26) 4. Regulation to reduce land clearing in GBR catchments (S5)	1. Less solutions are needed to protect the Reef (S27) 2. Sun shield geoengineering – e.g. biodegradable surface films on the ocean to reflect heat (S16) 3. Marine Park management efforts to improve practices of recreational users and tourists on the Reef (damage from anchors and human contact) (S1) 4. Educational campaigns to promote personal reduction of carbon footprint (S21)	Scientific (80%) NGO (46%) Government (14%)

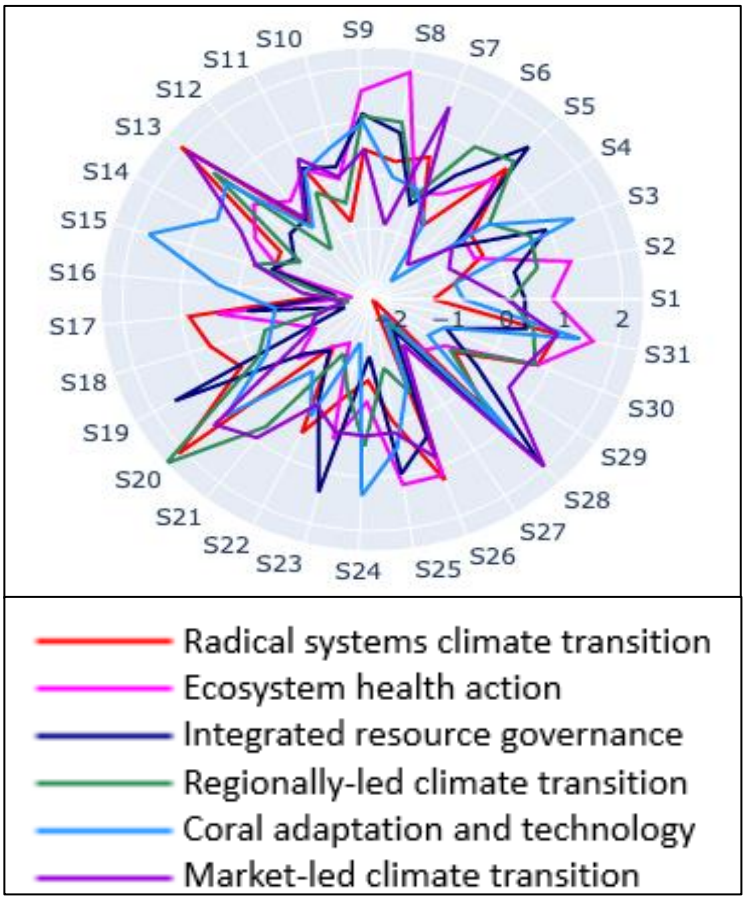

Figure 5.1.a Comparison of perspectives on solutions by statement

Radar plot comparing six different perspectives on solutions to protect the Great Barrier Reef. Each radial axis (S1-S31) represents an intervention statement (see Table 5.2). Greater distance from centre represents increased support for the intervention as scaled by z-scores. Each coloured line represents a perspective and each S represents an intervention statement.

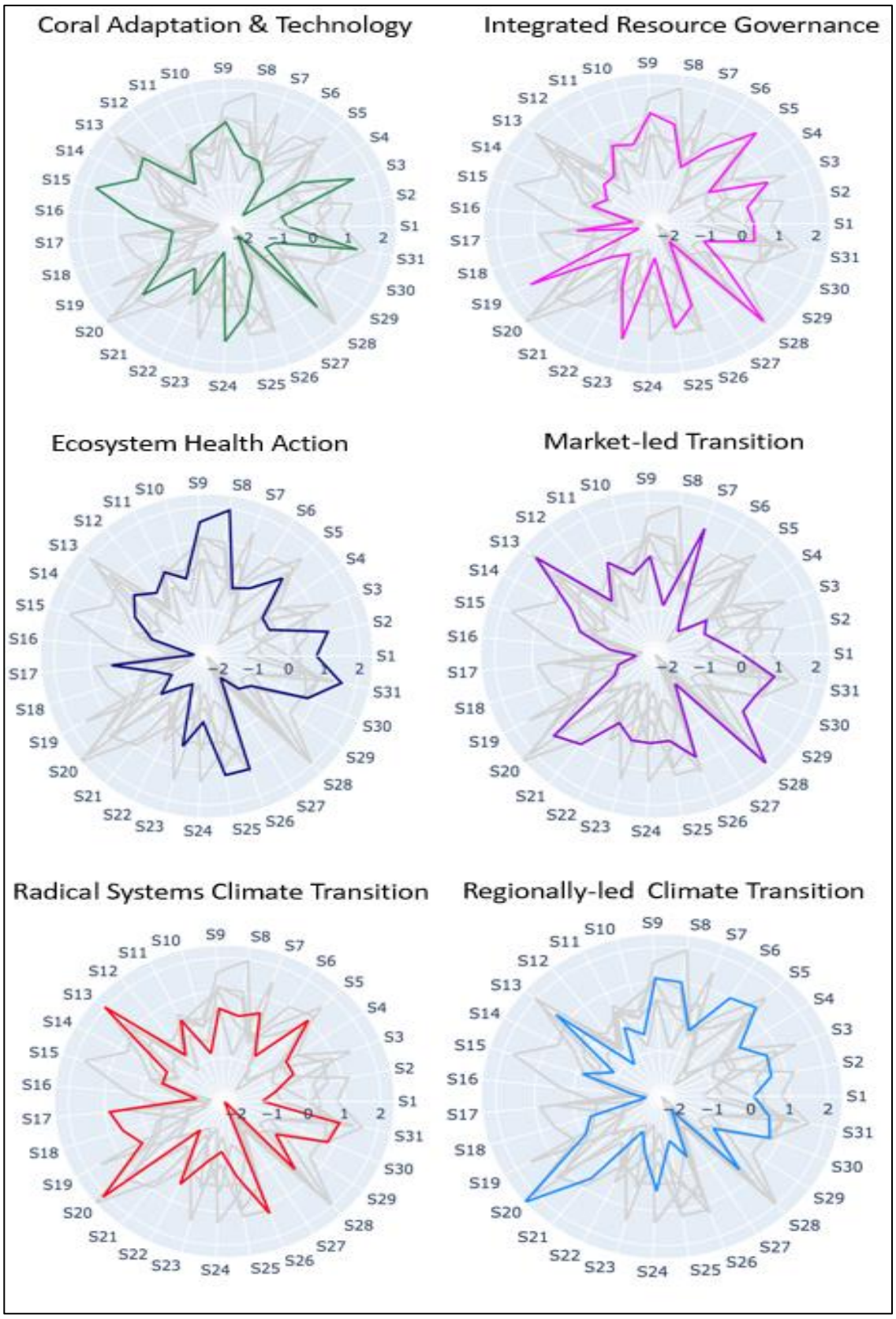

Figure 5.1b Six perspectives on intervention by statement

Individual radar plots highlighting one perspective in colour against all other perspectives in grey to enable visual comparison. Each radial axis (S1-S31) represents an intervention statement. Greater distance from centre represents increased support for the intervention as scaled by z-scores.

5.6.3 Most and least supported solutions

Figure 5.2 shows the five most supported solutions and the five least supported solutions with individual z-scores for each perspective. Among the most supported solutions are two climate mitigation solutions, two ecosystem restoration solutions, and one planning solution. Table 5.4 highlights that top five most supported solutions have higher levels of consensus overall (z-score >0.80) than the bottom five least supported (z-score < -0.50). However, the two least supported are the most agreed upon (z-score < -1.20). The statements were for fewer solutions, indicating support for more to be done, and sun shield geoengineering, indicating strong aversion or scepticism to some technical solutions. For climate mitigation solutions (Figure 5.3), regional transition planning and government emissions reductions were most supported, with carbon markets and personal reduction of carbon footprint within an average range but showing division between perspectives. Technological adaptation solutions (Figure 5.4) varied, with sunshield geoengineering the least supported. Coral restoration and assisted coral adaptation were within average range except for assisted coral adaptation supported by the Coral Adaptation and Technology perspective.

5.6.4 Geoengineering not supported by most

Only one perspective supported a technological adaptation response (Coral Technology and Adaptation), and notably, geoengineering scored low across all other perspectives. This is noteworthy given the development of new policy frameworks and investment into technological adaptation responses has been significant over the past five years (Tollefson, 2021). Given technological and geoengineering responses such as cloud brightening, surface film, and assisted coral adaptation are in experimental stages, there is a lack of research into community perspectives on these issues. Participants were primarily concerned about effectiveness, cost, and unintended consequences. Many participants mentioned as a cautionary tale the introduction of cane toads into Australia to solve an ecological problem that had disastrous consequences and were concerned that unintended and irreversible consequences could occur as a result of human solution. This may point to the social limits to adaptation where the cost or risk become untenable or undesirable (Adger et al., 2009). Furthermore some actors were concerned that geoengineering may create a distraction from the changes that are needed – referred to as placebo policies or governance traps (McConnell, 2019; Morrison et al., 2020), in which case it could be considered a form of maladaptation. However, some participants supported this view because they perceived social and political change needed to reduce global emissions as slow and saw technological adaptations as easy to implement as a stop-gap measure to provide critical support to the Reef until global emissions reductions occurred.

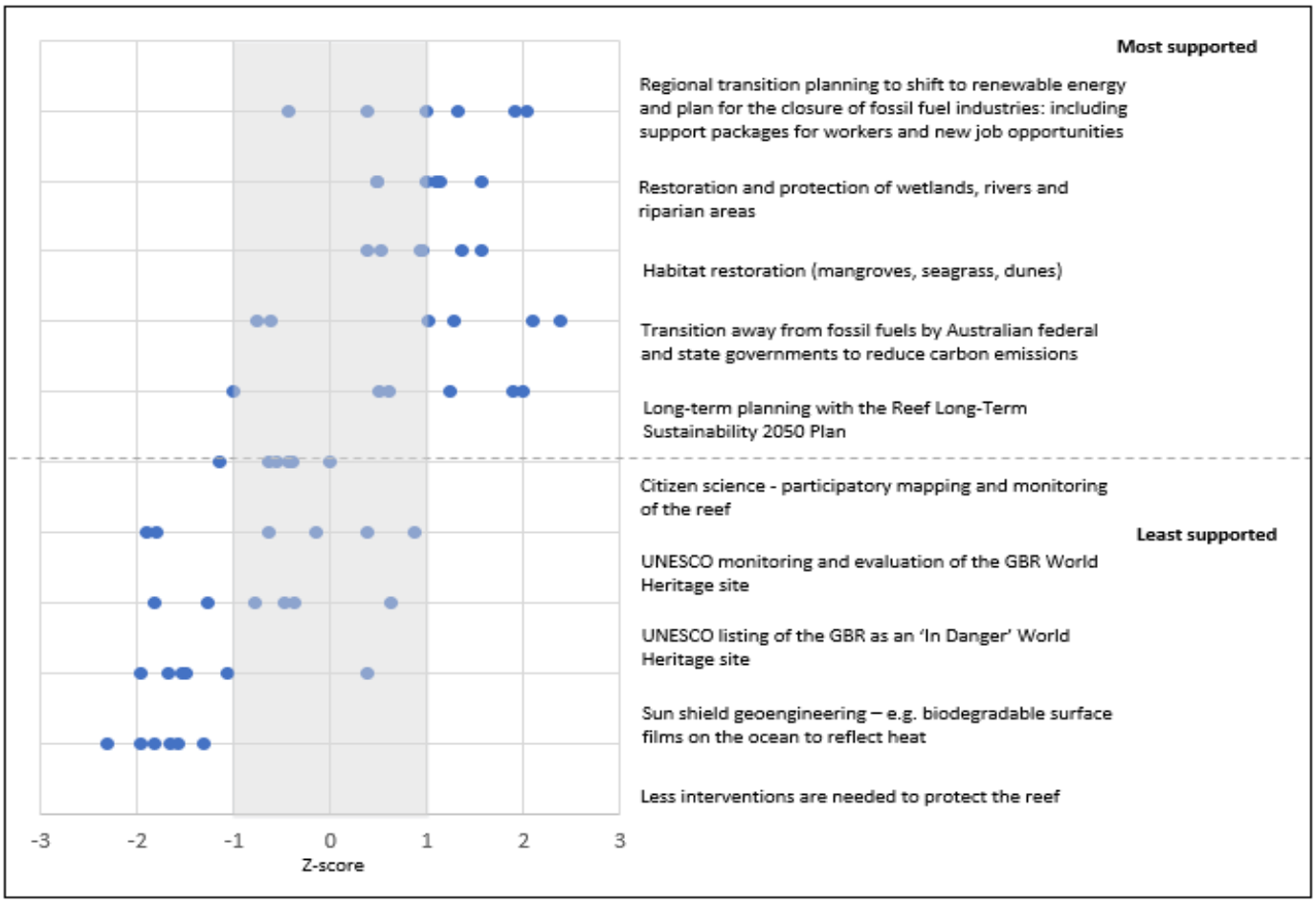

Figure 5.2 Six perspectives on most and least supported solutions
Z-scores above or below 1 are most indicative of support or lack of support, where the solutions falling between 1 and -1 (grey area) are less indicative of a strong position.

Table 5.4 Most and least supported solutions -- average z-scores

Highest Average z-score*	Solution	Average z-score*	Solution
1.03	Regional transition planning to shift to renewable energy and plan for the closure of fossil fuel industries: including support packages for workers and new job opportunities	-1.77	Less solutions are needed to protect the Reef
0.96	Restoration and protection of wetlands, rivers and riparian areas	-1.22	Sun shield geoengineering – e.g. biodegradable surface films on the ocean to reflect heat
0.95	Habitat restoration (mangroves, seagrass, dunes)	-0.68	UNESCO listing of the GBR as an 'In-Danger' World Heritage site
0.90	Transition away from fossil fuels by Australian federal and state	-0.53	UNESCO monitoring and evaluation of the GBR World Heritage site

	governments to reduce carbon emissions		
0.87	Long-term planning with the Reef Long-Term Sustainability 2050 Plan	-0.526	Citizen science – participatory mapping and monitoring of the Reef

*Averaged z-score for each statement from all participant answers

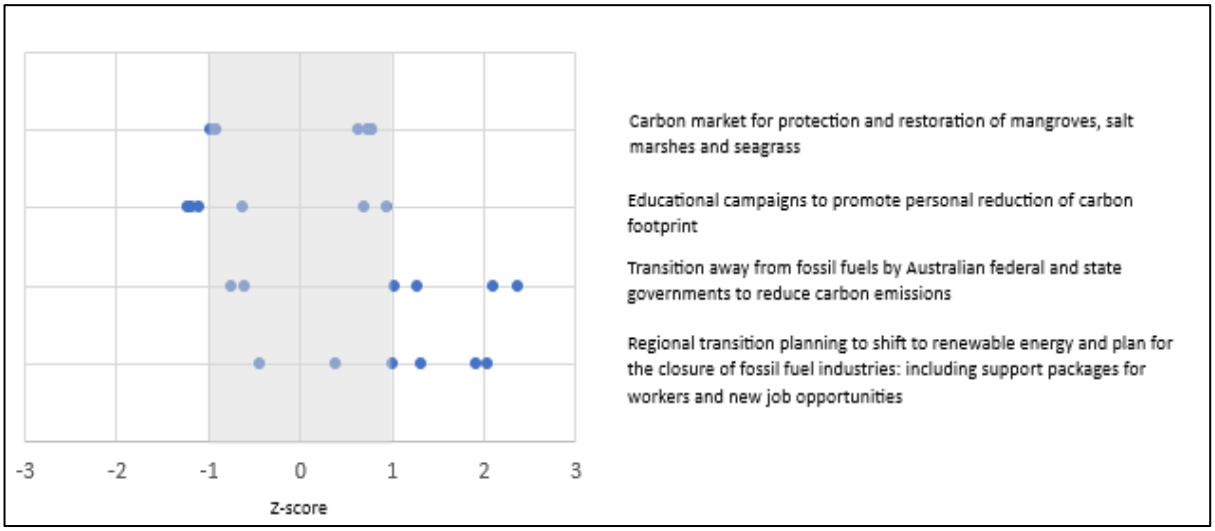

Figure 5.3 Climate mitigation solutions Z-scores above or below 1 are most indicative of support or lack of support, where the solutions falling between 1 and -1 (grey area) are less indicative of a strong position.

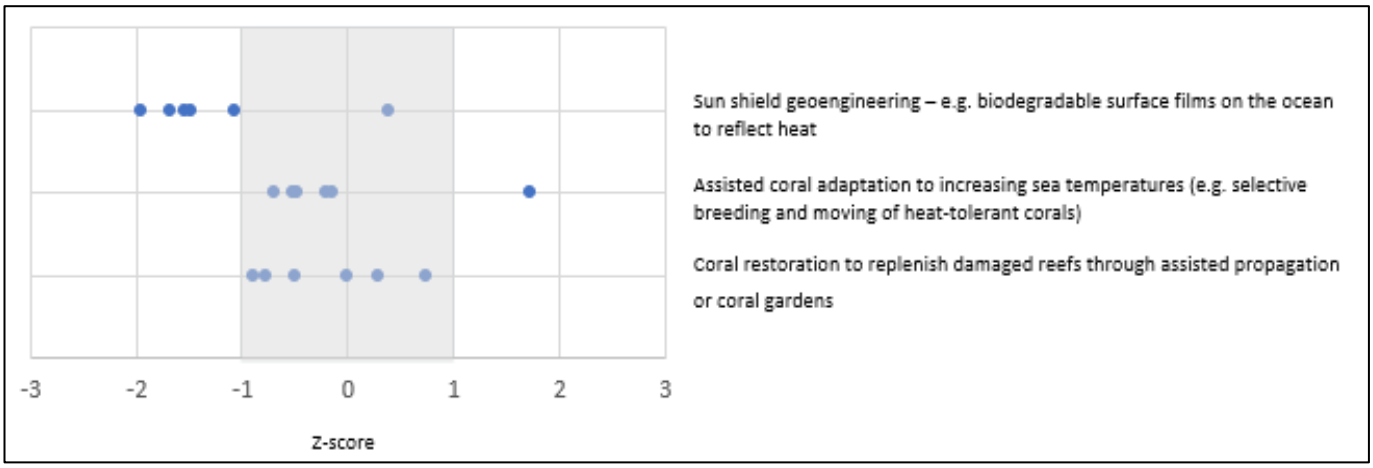

Figure 5.4 Technological adaptation solutions Z-scores above or below 1 are most indicative of support or lack of support, where the solutions falling between 1 and -1 (grey area) are less indicative of a strong position.

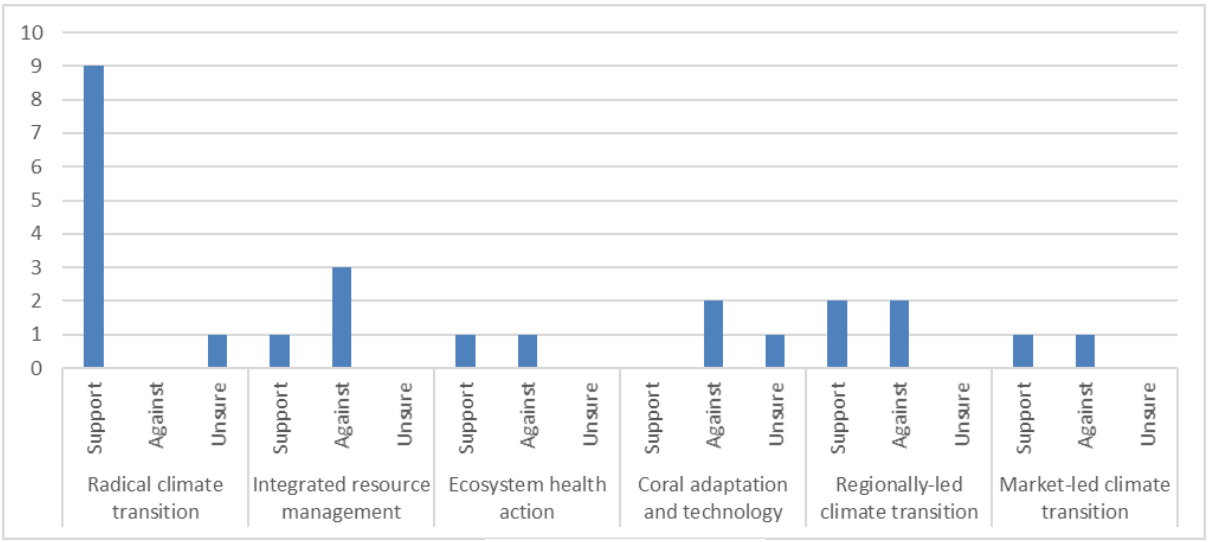

Figure 5.5 Perspective group stance on the In-Danger listing. Figure shows each perspective group and their stance on the In-Danger listing (support, against or unsure).

5.6.5 Characterising the 'problem-solution space' of the Reef

In relation to how the results relate to the 'problem-solution space' framework (Wanzenböck et al., 2020), I find the problem has low contestation, high complexity and low to medium uncertainty (Table 5.5). For the solutions, I find they have medium contestation, high complexity and medium to high uncertainty (Table 5.6). Figure 5.6 maps both problem and solution dimensions.

Table 5.5 Dimensions of problem wickedness for Great Barrier Reef

Contestation: *Stakeholder divergence*	Low contestation that climate change is the biggest threat, as all participants agreed and this finding has also been supported by other studies.
Complexity: *institutional and situational*	High complexity that the problem is caused by global actions, no single government or actor has control, and negative impacts can be exacerbated by regional and local actions that reduce resilience of the Reef.
Uncertainty: *lack of knowledge (cause and effect)*	Medium to low uncertainty that climate change is a threat but some variability around extent and pace of damage expected.
Problem statement:	Convergence around climate change problem, however high complexity means there is some divergence around the causes, as there is an interplay of global, national, regional, and local actors and actions that cause problems for reef conservation.

Table 5.6 Dimensions of solution wickedness for the Great Barrier Reef

Contestation: *opinions on best/worst solution*	Medium contestation due to finding a range of different perspectives, yet three of six supported some version of a climate transition, and I also saw widespread scepticism of geoengineering.
Complexity: *need for systemic approaches*	High complexity of solutions given that systemic transformative solutions involved a wide range of actors and cross-sectoral change. Various conservation solutions operate as a policy-mix across different scales, adding complexity due to feedbacks and solution interaction.
Uncertainty: *lack of knowledge (effectiveness, feasibility, impacts)*	Medium to high uncertainty as national responses may not be sufficient and new technology has not yet proven its effectiveness and may have unintended consequences.
Solution statement:	Medium to high divergence around solutions – some contestation over solutions, as some perspectives focus on proximate or regional actions, however three perspectives oriented towards climate transitions indicting possible cohesion in that area. Solutions required are highly complex, and medium to high uncertainty over solution effectiveness, timeliness, cost, and consequences.

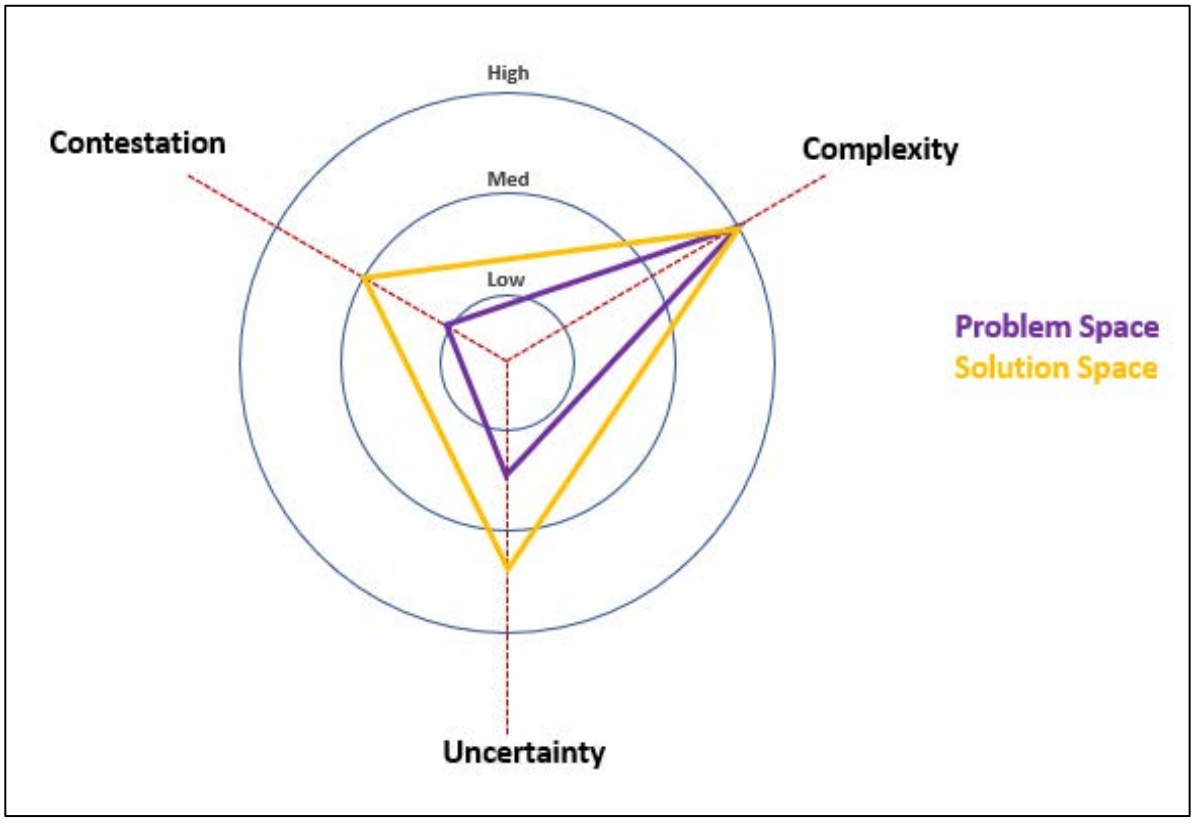

Figure 5.6 Problem-solution space characteristics of reef conservation

Radar chart shows three rings – the low score in the centre of the chart, the medium score represented by the ring in the middle, and the high score represented by the outer ring. Each line from the centre represents on dimension of wickedness – contestation, complexity and uncertainty. The scores for the problem space are represented by the colour purple and the scores for the solution space are represented by the colour yellow.

5.7 Discussion

The results extend our understanding of whether crisis frames can shift perspectives and potentially act as a window of opportunity for transformative policy solutions. In this section I discuss the utility of the 'problem-solution space' concept for characterising the wickedness of the Great Barrier Reef from the perspective of the participants, the implications for crisis-framing, and the implications for governance.

5.7.1 Diversity of perspectives on solutions

My aim was to understand perspectives of reef solutions in the context of climate change – to discover whether convergence of problem definition has resulted in convergence on solutions; or another configuration within the overall problem-solution space. I found that despite high agreement that climate change is the biggest threat to the Reef, there was substantial diversity amongst perspectives on what was most supported as solutions to protect the Reef (six statistically significant factor loadings). Figure 5.5 indicates that those in favour of transformative change are more likely to support the In-Danger listing, however there was mixed support for most perspectives except the Coral Adaptation Technology, for which there was no support. Figure 5.6 highlights that the problem dimensions are viewed as 'less wicked' than the solutions – in other words, there is more convergence of the problems facing reef conservation, but how to choose and implement effective solutions is the bigger challenge.

The identification of six perspectives on solutions highlights a complexity of viewpoints, more than is often represented in simple narratives in the media. The implications of such diversity of perspectives indicate the need for policymakers and managers to consider approaches that can harness pluralism. While this may mean that there is no single popular policy or approach, these results can be used to engage specific groups, or to tailor communication about solutions that might better address people's concerns. Indeed, scholarship on wicked problems highlights that working through wicked problems is typically on-going, conflictual, and dynamic (Head, 2014). For this reason, taking a more nuanced approach to understand relevant social perspectives as they shift could be useful to empower governments and managers to navigate policy windows as they emerge from climate events. Indeed Wellstead & Biesbroek (2022, n.p.) highlight that often absent from environmental literature is the relationship between stakeholders and government agencies, '…what is often overlooked is that government agencies possess autonomy, are aware of local conditions, and have bottom-up processes of their own.' As such, the challenge of stakeholder pluralism can be navigated with more consideration of the processes and instruments through which government bureaucracies use their

autonomy to engage with plural publics – and hence find the 'sweet spot' of climate solutions (Leiserowitz et. al., 2021; Wellstead & Biesbroek, 2022).

5.7.2 Different types of climate transitions

In this study, I aimed to understand whether extreme climate events may trigger support for large-scale transitions and transformations, as this may indicate the opening of a policy window for change. I found that three perspectives prioritised climate transitions, indicating there may be a policy window for climate transitions, however each perspective differed in the preferred type, the degree of social and economic change, and the actors involved.

The most transformative perspective was the Radical Systems Climate Transition which emphasised a high degree of social and economic change. The Radical Systems Climate Transition prioritises Indigenous involvement which reflects some perspectives of just transitions that argue attempts for large-scale social change ought to include social justice dimensions (Bennett et al., 2019). The Radical Systems Climate Transition was thus the most transformative perspective of the whole, linking fundamental social, economic, and ecological change. Participants adhering to this view often critiqued capitalism, colonialism, and fossil fuel industries, seeing them as structures that needed to be changed to enable dealing with reef management and climate change in a morally normative way. This view was most supported by scientists and NGOs, with no participants from industry supporting this viewpoint. Given this viewpoint includes the most transformative systems change, akin to deep radical change (Morrison et al., 2022), it may be the case where those with more power are less supportive of change, as it may be a threat to their position and power in the system, or simply that the status-quo aligns with their preferences and interests in which case they can become a barrier to transformative change (Barnes et al., 2020; Morrison, 2017).

Interestingly I also found support for a Regionally-led Climate Transition, a perspective that may indicate support for transition that is more place-based - where subsidiarity of decision-making and action are prioritised. Indeed, a recent study indicates this commitment, where reef actors chose to deal with climate impacts through existing governance arrangements rather than create new venues (Datta et al., 2022). And finally, the Market-led Climate Transition perspective prioritised markets and economic incentives to drive solutions, with participants favouring these approaches as less divisive than regulatory policy, particularly in relation to foster behaviour change. I also found similarities between some of the perspectives and Langston et al. (2019) study of landscape governance discourse groups, namely their 'Integrationists' discourse group and the 'Integrated Resource Management' perspective, who value governance and policy cohesion, as well as their 'Neo-liberals' and the 'Market-led Climate Transition' groups who see positives from markets in sustainable development. Given the

different contexts of the studies (the Langston study was about Indonesian landscapes) the results suggest there may be similar views about environmental governance that span contexts.

These findings support contemporary understandings of transitions that emphasise how there is no single transition pathway, and that transformative change needs to be explicit in looking at the specifics of change - including who loses and who benefits (Blythe et al., 2018; Cleaver & Whaley, 2018). My results contribute to empirically grounding this transformative discourse by explicitly revealing what transformation may constitute in terms of concrete policies and actions from engaged actors, many of whom feel the consequences of paths taken or not taken.

5.7.3 Lessons for crisis solution framing

One dimension of wickedness in Wanzenbock et al. (2020)'s 'problem-solution space' concept is contestation. The results revealed that this dimension requires further delineation, especially in relation to whether there is public contestation or elite contestation over the problems and solutions, because the strategies to address either of these situations are very different. In Australia, poor climate policy performance has been empirically linked to elite contestation in the form of political gridlock due to fossil fuel influence on governing political parties and public relations campaigns against low emissions climate change policy (Lucas, 2021; McKnight & Hobbs, 2017). Hence, to have reflexive governance recommendations gain elite political support there is a need to focus on what can be done to shift power to open these avenues. In transitions theory, destabilisation of existing fossil fuel regimes has been suggested as a green innovation alone that is not sufficient to enable transformation (Brauers, Oei, & Walk, 2020; Geels, 2014). Given political gridlock at the elite level, Wanzenbock's concept could be improved by developing destabilisation measures both at the structural-institutional level and through new discourses. At the structural-institutional level, policies are needed to limit political contributions from the fossil fuel industry and reduce the 'revolving door' whereby politicians go to work for fossil fuel companies after they leave, or fossil fuel company executives become politicians (Lucas, 2021). Another destabilisation approach could include just transition campaigns that can become disruptive counter-hegemonic discourses creating synergy between organised labour and environmental justice interests (Evans & Phelan, 2016). Just transition campaigns organised as social movements around a sense of place and environmental justice have met some success in the Australia's Hunter Valley (Evans & Phelan, 2016). Social movements promoting identity around a sense of place have also been linked to climate transitions and coal phase-out in Germany and may also be relevant for communities with a strong sense of community and place in regional Queensland (Mohr & Smits, 2022). These new frames can create openings for new policy venues and experimental governance designs that may shape the broader political landscape (Voß & Bornemann, 2011). Contestation and destabilisation strategies also highlight the importance of social

innovation (change in social practices) in transformations; regional energy transitions are not purely technical, but also require agency (a mix of relations, resources, reflexivity) if they are to gain momentum (Suitner, Haider, & Philipp, 2022).

Wanzenbock's 'problem-solution space' conceptualisation also emphasises social learning (Ison, Collins, & Wallis, 2014), a concept now well-established in the environmental social sciences and used to normatively describe a number of processes of social change (Pahl-Wostl, 2009; Reed et al., 2010). However, the results revealed that social learning has limited use as an actionable recommendation because it does not represent a specific action or method, rather describes any result of social interaction processes that have an outcome of pro-environmental behaviour of a group or wider social system. As argued by Reed et al. (2010, n.p.) 'researchers have defined social learning in multiple, overlapping ways and confused social learning with the conditions and methods necessary to facilitate social learning or its potential outcomes. We emphasize the need to distinguish social learning as a concept from the conditions or methods that may facilitate social learning'.

5.7.4 Framing agency and scales of action

Overall, I found actors in the Great Barrier Reef perceived varying degrees of agency and scales of action in responding to coral bleaching, a result which also aligns with the findings of a recent Barnes et al., (2022) study. Understanding how actors perceive their agency and the scale at which it can be exerted in responding to climate change is critical as adaptive capacity, social change and adaptation responses are connected across multiple scales (Brown & Istaway, 2011; Bullock, 2022). Indeed, agency in relation to climate change responses is emerging as a significant challenge. For example, in a study of major threats to natural World Heritage sites, climate change was the category that managing actors of all sites most reported as difficult to address (Falk & Hagsten, 2023). Climate change fundamentally challenges ecosystem and catchment management approaches, because although much can be done to improve resilience at local levels, the threat must be mitigated at all scales (Morrison et al., 2020). Our results highlight that despite convergence over problem definition, complexity and uncertainty around the problem remain. An important area for future research is how agency can be linked or supported across scales, so that those impacted by climate impacts can better affect change at national and global scales.

5.7.5 Problem and solution frame enmeshment

Returning to the first aim of this study which was to test the utility of the 'problem-solution space' concept in extending the 'Crisis Policy Pathways Framework', the concept proved useful in drawing together perspectives of the problem and solution in unison. In doing so, I was able to articulate, for example, that despite convergence over crisis problem definition, actors did not converge over the

solutions. In the case of the GBR, divergence of perspectives over crisis framing were more reflective of actor perceptions of solutions as much as, if not more than, the problem itself. This clustering of perspectives is highlighted in Figure 5.5 where almost all actors with a Radical Climate System Transition perspective supported the In Danger listing crisis framing for the Reef. The extended Crisis Framing Policy Pathways framework thus reflects how actors perceive the problem and solutions together, enmeshed, rather than as separate entities, and how it is this entanglement which shapes their stance on climate crisis.

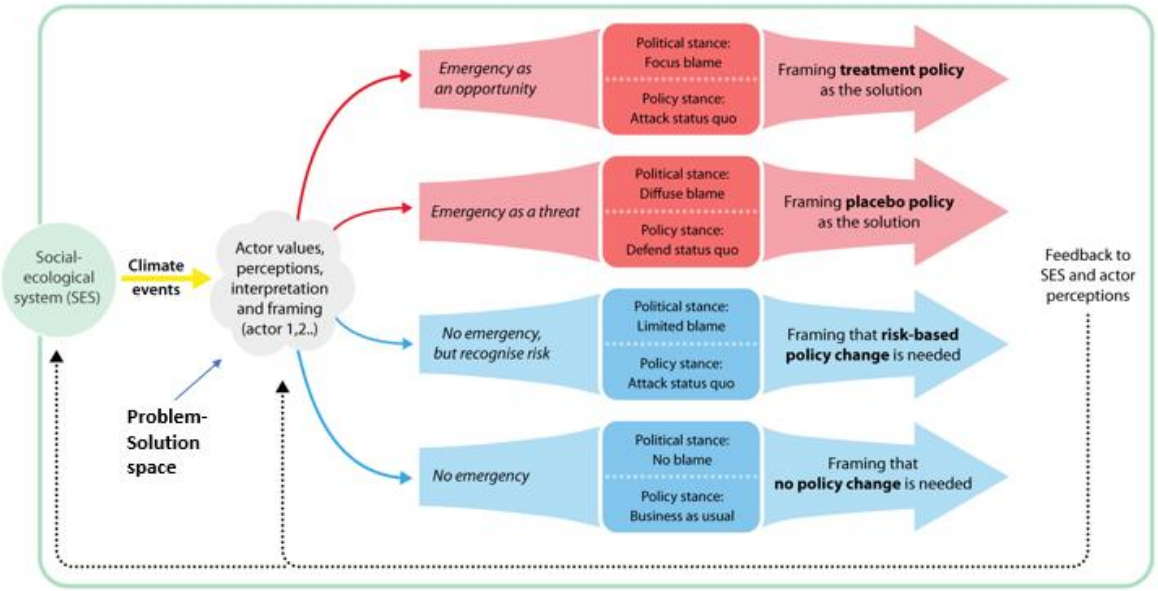

Figure 5.7 Crisis Framing Policy Pathways Framework incorporating the problem-solutions space (adapted from McHugh et al 2021).

5.8 Conclusion

In summary, the first aim of this study was to extend the 'Crisis Policy Pathways Framework' by incorporating the 'problem-solution space' concept that has emerged from innovation studies to better characterise the framing and discourse around Reef conservation from relevant actors after mass coral bleaching (see Wanzenbock et al., 2020), and to understand whether convergence over climate change as the biggest threat has resulted in convergence over solutions. Given that climate change is a wicked problem, immediate alignment of problem to solution seemed unlikely, however there were no empirical studies on this in the context of coral reef conservation or the Great Barrier Reef. Characterising the problem-solution space more accurately is increasingly necessary to assist policy makers strategise to improve problem-solution convergence in times of climate crisis.

My second aim was to understand to what extent actors perceptions converged over the need for transformative solutions. I assumed that if actors respond to mass bleaching with more support of transformative policy, then this may be indicative of a policy window opening for more support for transitions policy in Australia. However I also recognised that policy windows can be unpredictable and involve the intersection of multiple factors such as politics, problem, and proposals (Kingdon, 1984). In the context of the Great Barrier Reef, it was unknown whether a new problem definition for reef conservation may create a window of opportunity for new policies, as actors re-assess what solutions are needed to solve it. I found that perceptions on solutions are re-focusing on more transformative change, which indicates a policy window may be emerging due to the convergence of belief that climate change is the biggest threat to the Reef.

While the debate about climate change's impact on the Great Barrier Reef seems settled, the debate around solutions is just beginning. This study shows that people are starting to think big – about what needs to be changed or radically transformed, if the Reef is to be protected. However, given there are many pathways forward, the focus needs to be on governance systems to help navigate the range of solutions. Although more focus on climate transitions as a solution seems promising, the results also highlight the potentially bigger challenge of how to shift power in a system that has been in political gridlock over climate solutions.

6 LESSONS FOR CRISIS FRAMING IN ENVIRONMENTAL GOVERNANCE AND FUTURE DIRECTIONS

'Globally, we need to understand, monitor and address climate change threats to World Heritage sites better'

- Mechtild Rössler, Director of UNESCO's World Heritage Centre (UNESCO, 2016)

Contribution: I synthesised findings from the thesis and wrote the chapter. Tiffany Morrison, Chris Margules, and Michele Barnes provided editorial support.

6.1 Summary of the thesis and limitations

As we enter an epoch increasingly defined by climate impacts, how individuals, societies and governments respond to crises will fundamentally affect our ability to conserve ecosystems and the human systems that depend on them. Through a critical review of relevant literature (Chapter Two), ethnographic research (Chapter Three) and qualitative and quantitative interviews (Chapters Four and Five), I have explored how crisis is socially constructed and contested within governance systems and can elicit a range of governance and policy preferences depending on actor interpretations. In the case of the Great Barrier Reef, crisis framing was typically pursued by those seeking policy change and stronger environmental protection. Yet crisis framing also emerged as a complex pathway to better outcomes, and there remain possible unintended negative consequences of crisis framing that will need to be managed or mitigated.

In one of the first multi-level investigations into crisis framing, my goal was to deepen and extend theoretical dimensions of environmental governance and policy. First, I deepened existing conceptual frameworks on crisis framing (Boin et al., 2009). I achieved this by nesting existing policy studies frameworks within theories of social-ecological systems and feedbacks, especially as they related to climate impacts. This enabled me to develop a new pathway relating to recognition of risk relevant to the climate emergency and other forms of crisis framing (Chapter Two) (McHugh et al., 2021). I then tested this new conceptual model using individual responses to the World Heritage In-Danger listing process, where I found an additional pathway adopted by those who remain uncertain about crisis frames and subsequent policy responses (Chapter Four). In a more ethnographic exploration, I also sought to extend existing framing theory in political science to incorporate a new spatial dimension by showing how space within policy venues can allow actors to dominate or be constrained in their ability to frame crises in the World Heritage system (Chapter Three). I then looked more closely at UNESCO's crisis framing mechanism, the In-Danger listing, and how actors perceive its opportunities and challenges for the Great Barrier Reef (Chapter Four). In my final empirical chapter, I applied a Problem-Solution Space Framework to understand the wickedness of the problems and solutions, finding higher contestation and uncertainty around solutions, indicating the need for a bigger scientific and governance shift towards the search for crisis solutions (Chapter Five). In this chapter I also built on the transitions literature and key perspectives to show that problem definition convergence does not lead to convergence over solutions, indicating the need for a better understanding of the social dynamics in the multiple and contested pathways towards future sustainability of climate-impacted ecosystems (Chapter 6).

In the following discussion I synthesise the key findings of my study, highlight key contributions, and discuss the implications, limitations, and future research directions. The structure of my discussion follows the logic of the primary and secondary research questions. The overarching research question of this thesis was: *How does the framing of climate crisis affect World Heritage governance?* To answer the overarching research question, I took a multi-level approach to understand crisis framing in governance. The crisis I focused on was climate change, and the governance and policy system I focused on incorporated the governance of UNESCO World Heritage ecosystems, specifically the climate-impacted Great Barrier Reef site. Each chapter then addressed a different question about crisis framing across multiple levels of the polycentric governance system:

Research Question (RQ) 1 (Chapters 3-8): How does the framing of climate crisis affect World Heritage governance?

RQ 2 (Chapter 3): What are the opportunities and challenges of climate emergency framing for governance and policy?

RQ 3 (Chapter 4): How are crises framed in international governance?

RQ 4 (Chapter 5): What are the opportunities and challenges of the 'In-Danger' crisis framing for the Great Barrier Reef?

RQ 5 (Chapter 6): Does increased convergence over crisis definition lead to convergence over solutions?

6.1.1 Limitations

Ethnography to understand the spatial dynamics of crisis framing

While ethnographic techniques can be valuable in gaining insight and building theoretical knowledge about the 'politics of the everyday' in environmental governance venues, the limitation is generalizability, as was I only able to ascertain information from this single case. To know whether the spatial dynamics I identified existed in other policy venues, further case studies of similar policy venues would be needed. Further case studies would illuminate whether the spaces identified in this research are specific to the World Heritage system, or indicative of typical spaces that occur throughout environmental governance regimes. For example, United Nations Convention on Biodiversity meetings might provide a contrasting example of how spatial dynamics affect actor framing, particularly as these meetings involve different types of participation by civil society in decision-making processes.

Timeframe of Interviews

The interviews for Chapters Four and Five took place between June 2021 and March 2022. It must be noted that over this timeframe the Great Barrier Reef was thoroughly discussed in the media and in July 2021 UNESCO made its recommendation that the Reef be added to the In-Danger list. It is possible

that participants may have shifted their views over this time, which could be regarded as a limitation. However, also to be considered is that these debates and media attention have now been occurring almost continuously since the mass coral bleaching events of 2017 onwards, and the shifting views of engaged actors can be regarded as a research result as much as a limitation.

6.2 Alternative spaces for marginalised crisis-makers

Recent crisis scholarship has indicated that before a crisis is legitimised, it undergoes informal framing processes, typically through bottom-up dynamics driven by civil society or social movements (Junk & Rasmussen, 2018). However environmental governance scholarship has tended to focus on 'ledger politics' i.e. the outcomes or decisions made in formal top-down venues, with little exploration of how informal framing processes occur. This oversight is problematic, particularly in state-dominated United Nations contexts, because it renders invisible the actions, processes and strategies that non-state actors use to exert influence in these policy venues, even if this influence is small (Witter et al., 2015). To uncover these informal collective crisis framing dynamics, I utilised an emerging method in environmental governance – event ethnography – to observe these dynamics as they took place at a World Heritage meeting in 2019 (Vadrot, 2020). Through this research I found that framing in policy venues was mediated by the space in which actors were situated. Framing theory has typically focused on the 'frames' around an issue, meaning how the issue is positioned, indicating what the problem is and who is responsible for it (Badullovich, 2022; Carragee & Roefs, 2004; Carstensen & Schmidt, 2016; van Hulst & Yanow, 2016a). There remains little empirical research of how framing contests take place (Boscarino, 2016). Only more recently has framing research included the actors doing the framing, which is critical given research shows people care about who the messenger is, not just the message (Hornsey & Fielding, 2017, 2020).

By adding the spatial dimension (Figure 6.1), I show that the spaces in which actors are situated affects their ability to frame crises, which affects their ability to act as a messenger in the first place. I identified three types of spaces: state-dominated space in the formal meeting arena; shared space at side events where state and non-state actors would collaborate and more marginalised actors had opportunities to re-frame issues; and finally, alternative spaces outside of the policy venue where non-state actors had their own meetings and reports, where they could frame issues as crises without state interference. The creation of alternative space was a framing strategy of actors typically marginalized in the policy venue to increase their collective framing power informally.

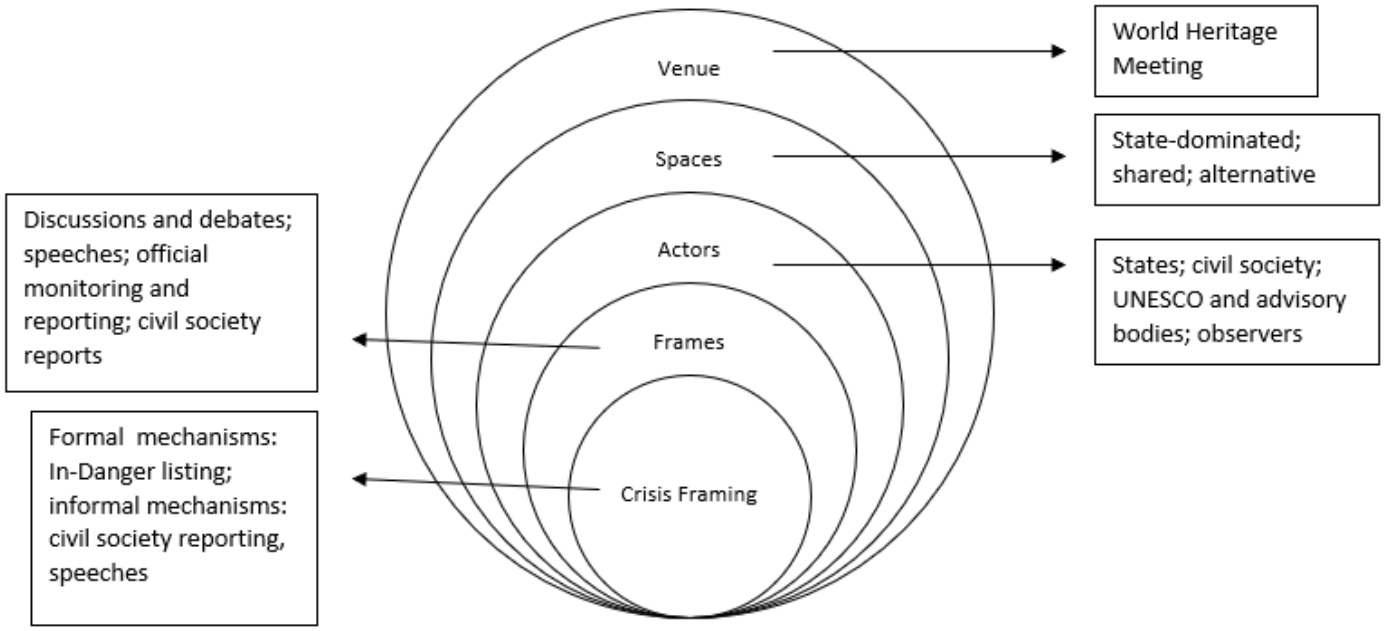

Figure 6.1 Nested factors affecting crisis framing in environmental governance. Venues are where decision-making takes place. Space influences which actors have power to frame issues as crisis. However, there are multiple types of spaces and actors can create alternative space so they can have more framing power.

6.3 Multiple transition frames for crisis-impacted communities

Environmental focusing events that become framed as crises have the potential to change how people understand problems and solutions. Transitions literature theorises processes of change and stability in relation to socio-techno and more recently, social-ecological systems, with interest in transitional processes that lead to sustainability transformations (Hölscher et al., 2018; Köhler et al., 2019; Patterson et al., 2017). Within this body of knowledge, crises are typically positioned as a possible trigger for transformative shifts, as they can change how actors perceive the problem and solutions – however there has been limited empirical research to test how crises impact perceptions on transformative solutions in environmental governance. In the case of the Great Barrier Reef, the occurrence of unprecedented consecutive mass coral bleaching had, and still has the potential to change the way actors perceive the problems facing the Reef, and consequently the solutions needed to sustain it. Q-method is an emerging method to help understand actor perspectives of complex environmental issues by merging qualitative and quantitative approaches. By employing this method, I was able to explore in systematic detail the perspectives of a diverse range of engaged actors. A key

finding was that three of the six solution perspectives that emerged prioritised climate transitions involving mitigation of carbon emissions at national and regional levels, and a 'just transition' whereby fossil fuel communities are supported into new economic trajectories (Bang, Rosendahl, & Böhringer, 2022; Edwards et al., 2022). However, interestingly, multiple solution pathways towards climate transition were supported – Regionally-led, Market-based and Radical. These results highlight that there are multiple pathways to achieve sustainability transformations, particularly when it comes to social innovation and change that underpins economic and industrial shifts (Suitner et al., 2022). While transitions theory recognises the non-linear social processes that enable transitions, it underestimates the contested political nature of sustainability as a concept and that there may be multiple ways to achieve sustainability that benefit some people and industries more than others (Edwards et al., 2022; Mohr & Smits, 2022; Stedman, 2016). For example, the Market-based Climate Transition perspective preferred the use of incentives and market-based tools to drive industrial change, whereas the Radical Climate Transition perspective preferred wider and deeper social system change that empowered marginalized groups such as Indigenous peoples. Notably, the Regionally-led Climate Transition perspective echoes recent findings on sustainability transitions which show that grass-roots and place-based sustainability transitions are better tolerated as they are not seen as being imposed from outside (Evans, 2008). This finding highlights the importance of considering the social, political, and geographic dimensions of change and the role that social dynamics, particularly place-based identity and community, can play in enabling or resisting change (Hornsey & Fielding, 2017). Approaches that seek to empower and improve the resilience of communities may be more effective in supporting sustainability transitions, however the processes are still likely to involve conflict and barriers at higher levels and therefore require careful framing (Evans & Phelan, 2016; Hobbs, 2020; Oberlack, 2017).

6.4 The 'dark side' of crisis-framing

While some actors push for emergency in the hope of urgent ecosystem protection, emergency framing also has the potential for undesirable and unintended consequences relating to procedure, efficacy and impacts on other sectors. Indeed, the crisis literature highlights that emergency governance can lead to less deliberation, dominant narratives, policy sub-system change, and large resource allocations (Figure 6.2). These dynamics may seem favourable when in the 'right direction' ie. towards sustainability and conservation, because fast and large-scale change can occur. However, they also engender the possibility of locking-in maladaptive pathways and policy traps that can be hard to redirect once initiated (Groen et al., 2023; Morrison et al., 2020; Nair & Howlett, 2016; Tidball, Frantzeskaki, & Elmqvist, 2016). Some climate scientists have raised concerns that emergency framing

could be used to 'control the future' of conservation by justifying large scale technological fixes, as deeper social, political and economic changes are positioned as too slow or difficult to achieve in the necessary timeframe (Hulme, 2019; Markusson et al., 2014). Indeed, emergency politics may run counter to environmental governance ideals of equity, participation, and deliberation, as crises could be used by governments to justify swift measures that have not been subject to established decision-making procedures. As demonstrated by the Crisis Policy Pathways Framework developed throughout this thesis, governments may respond to crisis as a political threat and support placebo policies that do not address the cause of the problem. In Australia in 2018, for example, the national Turnbull government controversially awarded AU$443 million dollars of funding to a small charity that had not been subject to a tender process to support conservation of the climate-impacted Great Barrier Reef. Recent auditing of where the money was spent shows that while the money supported useful programs relating to marine management, community development, and catchment water quality, none of the money was used to improve Australia's response to climate change - the main threat facing the Reef (Wallen, 2023).

Beyond procedural and efficacy issues, who decides if there is an emergency also raises issues of power and legitimacy – in the case of the Great Barrier Reef, participants questioned the fairness of the In-Danger listing for the Reef, as other World Heritage sites that were climate impacted were not also being included. This finding illustrates that emergency framing can become an object of contestation between actors in environmental governance, as actors struggle to direct and control perceptions, processes, and outcomes. Just as Blythe et al., (2018) warn us of treating the concept of transformation carefully to avoid the risk '…associated with discourse and practice that constructs transformation as apolitical, inevitable, or universally beneficial…' as is the case with crisis and emergency; such powerful discourse has the potential to be misinterpreted, contorted or exploited, so actors using this frame would be advised to proceed with caution.

The navigation of technological risk underscores this point. The Australian government continues to heavily fund the use of technology to protect the Reef from climate impacts; however serious questions remain about its efficacy and risks (Hughes et al., 2017; Hughes et al., 2023). Indeed, technology played a divisive role in participant perspectives outlined in Chapter 5, with only one perspective, the Coral Adaptation Technology perspective, supportive of science-based, technological solutions to heating oceans. While new technologies will play a role in the conservation of the Reef, the question remains as to the extent of their modification of the Reef, the costs vs benefit of their development, and the governance of risks both known and unknown. Many participants recalled the introduction of cane toads into Australia as a cautionary tale about the unintended consequences of human interference in the environment - where cane toads were released on to cane farms by settler-

colonial farmers and an ecological catastrophe ensued. These sentiments provide interesting insight into how actors think about technological-ecological risk, indicating that many are risk averse due to past intervention failures. This echoes recent findings into the socio-cognitive domains of adaptive capacity, demonstrating that past experience played a significant role in people's adaptive behaviour (Cinner & Barnes, 2019). These results indicate that future research into systematic social risk perception studies of these technologies needs to be undertaken if governance systems are to engage with people's core concerns. Indeed, Lemos et al. (2020, p.1) identify three grand challenges for climate risk that are underexplored: '(1) harnessing social science knowledge toward action and resilience, (2) understanding risk in a reflexive and consequential way, and (3) bridging the social sciences and the humanities to understand and manage risk.' Hence if experimental technologies are to be rapidly deployed with social legitimacy (Nicholson, Jinnah, & Gillespie, 2018), we must better understand what drives actor perceptions of solutions, including risks and benefits.

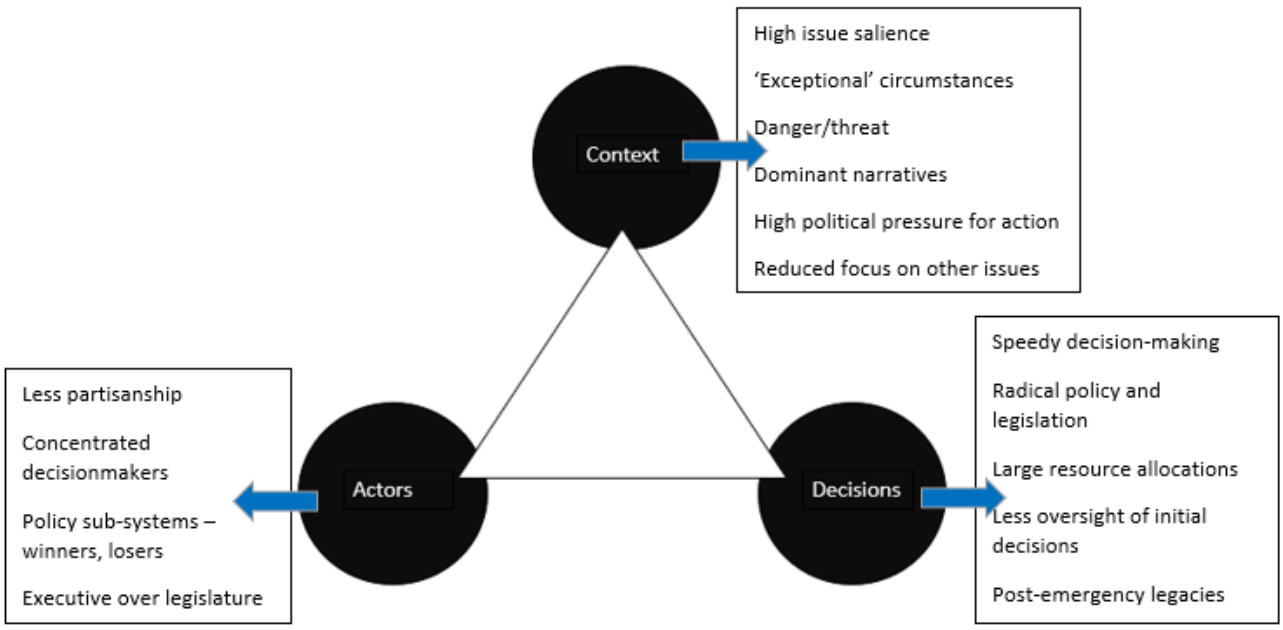

Figure 6.2 Crisis governance and policy characteristics

Figure 6.2 Crisis governance (triangle) is comprised of actor, decision, and contextual dimensions (black circles), with crisis framing shaping each dimension in different ways (boxes).

6.5 Uncertainty as a new position within crisis framing theory

Early understandings of crisis framing policy pathways were developed by Boin et al. (2009), drawing mainly upon case studies of national level governments and their perceptions of political opportunities

or threats and their policy responses. In this thesis, I have extended these understandings incorporating social-ecological systems theory to understand how climate crisis framing might have a range of impacts depending on the actors involved. To test the utility of the framework for understanding individual perceptions of crisis, I applied individual actor perspectives on the In-Danger listing to the framework and found a fifth pathway followed by those who were uncertain about crisis frames. This finding highlights the role of uncertainty in crisis framing, whereby some participants saw both positive and negative effects of the listing, and others were simply not sure about its impact. However, uncertainty as a response to environmental problems has also been raised as a political blame-shifting position, as uncertainty about a problem or its solution can shield those who do not want policy change or blame. Unfortunately, this position is not directly testable from the individual responses solicited in this research, because it is not information a participant can accurately communicate or necessarily be aware of. Rather, it is a position that needs to be inferred through case studies of organisations and their political positions, behaviours, and interests over time. Future research could therefore extend the approach taken here by applying it to a range of crisis examples that target sub-national actors and organisations. Such an approach could indicate whether the framework elaborated in this thesis could form the basis of a general typology of crisis responses, and whether there are differences in the way regional and local actors respond to crisis compared with national level actors. Recent crisis theory developments have already found new linkages between crisis events and policy change based on dimensions of geographical and policy proximity (Nohrstedt & Weible, 2010). However other dimensions may also be involved, including jurisdiction, media coverage and political polarization – which also links to uncertainty.

6.6 Crisis framing processes and feedbacks in environmental governance

The findings from the data collection and analysis for this thesis align with the understanding that actors perceive crisis framing in diverse ways and anticipate a broad range of system-wide and multi-sectoral effects. In undertaking this research, I also uncovered an additional layer of complexity regarding the processes of crisis framing, which are intertwined with power dynamics, politics, and legitimacy concerns, further contributing to divisions and debates. These findings highlight the intricate nature of crisis framing and emphasise the need for careful consideration of power dynamics and legitimacy issues when examining and implementing crisis framing approaches. Combining the theoretical and empirical findings from my research (Chapters Two to Five), I outline here a new conceptual framework to understand crisis framing feedbacks in governance and policy, explained in

detail below (Figure 6.3). The purpose of the framework is to elucidate the processes and effects of crisis framing in World Heritage governance that emerged from data collection. I formulated this conceptual framework by deepening existing conceptual frameworks on crisis framing (Boin, Hart, & McConnell, 2009) and including theories of social-ecological systems and feedback, especially as they relate to climate impacts. After developing this new conceptual model using individual responses to the World Heritage In-Danger listing process, I found participants identified cross-scale and cross-sector impacts as relevant to crisis framing (Chapter Four). I also added the dimension of space to framing processes in governance systems, reflecting my findings from Chapter Two. It is important to note that this extended framework is prospective, given it is based on perceptions from participants and triangulated with media reporting and policy documents, and has not been validated across cases. Further research would be needed to validate it and find out if its applicability can be extended beyond World Heritage governance and the case of the Great Barrier Reef. The description of the conceptual framework of crisis framing processes and feedbacks is as follows (numbers on the figure correspond with the description):

1. Ecological events are constructed and contested in governance systems via actors and their framing of problems and solutions.
2. Before a crisis is legitimised in a governance system it undergoes informal collective framing processes by actors within alternative and shared spaces.
3. Individual perceptions and collective definitions are mediated by actor interpretation of political, cross-sector and cross-scale impacts of the crisis framing, even if they interpret ecological events in the same way. Actors typically support crisis framing as a strategy for more urgent attention and policy change for ecological protection.
4. Governance system legitimisation of crisis can feed back to affect individual and collective definitions of ecological events and crisis. For example, the In-Danger listing of the Reef due to climate change reinforces the broader Climate Emergency framing.
5. Governance systems have multiple responses to crisis framing – accept, embrace, reject, controversy, conflict… resulting in different policy pathways and cross-scale (local, regional, national, international) and cross-sector (public, tourism, mining, agriculture, science) impacts can result.
6. As a result of crisis framing in governance, policy change may occur which can have cross-sector and cross-scale effects feeding back to the socio-ecological system.

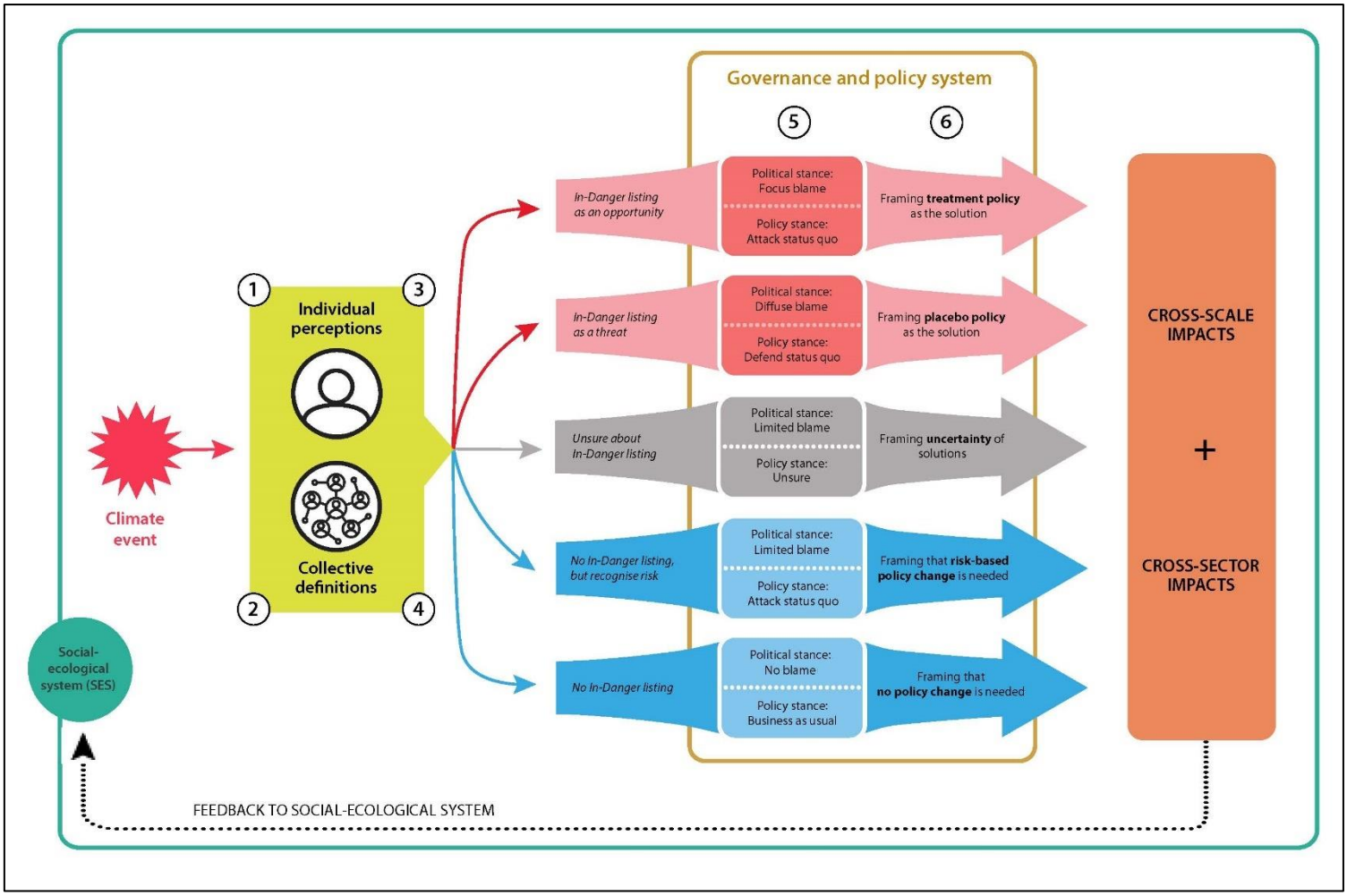

Figure 6.3 Crisis Framing Policy Pathways Framework incorporating processes and feedbacks in environmental governance and policy

6.7 Future directions for crisis framing in environmental governance

6.7.1 Tackling dimensions of wickedness from the Problem-Solution Space

The Problem-Solution space concept usefully extended the Crisis Framing Policy Pathways' framework in a number of ways. The concept was originally developed to assist those involved in mission-oriented policy to diagnose the wickedness of problems and solutions and find ways to increase alignment. I tested the concept's utility in understanding crisis problem and solution frames for the Great Barrier Reef, as perceived by engaged actors. The results confirmed limitations with the Problem-Solution concept relating to the strategies typically proposed for improving the problem-solution space, which have undergone minimal empirical testing. Future research into how governance can better address complexity, uncertainty, and different types of contestations (public and elite) would increase the utility of the problem-solution concept in crisis governance. While adaptive governance

understandings can inform how governance can address complexity and uncertainty in social-ecological governance through promoting flexibility, creativity, knowledge sharing and cross-scale linkages, dealing with issues of power and contestation remains a challenge (Chaffin, Gosnell, & Cosens, 2018; Cleaver & Whaley, 2018). Further understandings of power and contestation could be enriched by understanding of social movements, such as the Advocacy Coalition Framework from the policy sciences (Ayling & Gunningham, 2017; Christopher, 2008; Nohrstedt, 2009), and ideas about elite power in political science and political economy (Adger et al., 2005; Lucas, 2021; Nelll & Levy, 2006). As argued by Warner & Kuzdas (2017, p.69) 'Transformative adaptation research necessarily engages with the institutionalized, systematic inequity, marginalization, and human suffering that some members of communities face. If we are to continue this line of inquiry, we must systematically unpack those existing political-economic structures and processes that exist within the current hegemonic backdrop of globalisation and the corresponding neoliberal capitalist economy.' In other words, the wider socio-economic context needs to be understood and explicitly addressed if researchers are to engage with change at the scale that is needed in the pursuit of sustainability and conservation.

6.7.3 Legitimacy within the science-policy interface

Throughout the chapters of this thesis, issues of legitimacy emerged around who had the power to frame crises and the governance processes through which framing was achieved. Perceptions of these issues were articulated in Chapter Three, where at the World Heritage meeting, state actors debated the meaning and use of the In-Danger listing, inferring their own versions of legitimate use – including state-sanctioned use versus WHC determined. Non-state actors created their own alternative space to frame crisis, indicating that by being excluded, official processes did not legitimately reflect the reality for people and ecosystems. Similarly, the theme of legitimacy emerged in Chapter Four, where legitimacy concerns were raised over the appropriate and fair use of the In-Danger listing as a reason for and a reason against the listing of the Great Barrier Reef. And finally in Chapter Five, perspectives on solutions highlighted varied support for the In-Danger listing, indicating that for many, the role of UNESCO is not seen as central to the protection of reef, but oftentimes, seen as an outside hinderance from illegitimate international actors. Yet there were other perspectives indicating that the crisis framing of the Reef through the In-Danger listing is a legitimate beacon of truth that could have the power to cut through hegemonic fossil fuel discourses (Wright et al, 2022) that undermine the case for policy change. Future research directions include the role of climate crisis frames in shifting perceptions of legitimacy as institutions grapple with the dislocated impacts and responsibilities from global to local scales (Marsh et al., 2023).

These findings about legitimacy indicate that the field of environmental governance scholarship requires a more comprehensive and multidisciplinary approach to understanding crisis frames. This approach should consider the relational aspects of framing contests, particularly regarding the access and control of space. Furthermore, throughout the thesis, recurring themes emerged concerning normative positions on crisis framing mechanisms, their legitimacy, and anticipated outcomes. Analysing these variations provided valuable insight into the reasons why actors with ostensibly shared goals have divergent perspectives on crisis strategies like the In-Danger listing. Considering these significant findings, I recommend that a deeper examination of crisis framing in environmental governance is pursued, with a specific focus on the processes involved in constructing or suppressing climate crises. Additionally, attention should be given to the intricate interplay of politics, practices, and policies that shape and enable these framing dynamics. Future research looking to understand framing power in environmental governance might look at how spaces within policy venues change (or do not change) over time, and how this affects perceptions of legitimacy and the framing of environmental crises and their solutions. Such an academic endeavour promises to enhance our understanding of environmental governance and contribute to more effective approaches in addressing the climate challenges of the future.

6.7.4 Conclusion

As the world emerges from the Covid-19 pandemic, and climate impacts increase in severity, research into crisis and emergency is gaining momentum. As social constructs, it is important to interrogate how and why climate crisis frames are used and what effects they may have. Coral reefs are some of the first ecosystems to face existential threat due to climate change, this makes them an important window for understanding how actors, and governance systems like World Heritage, respond to climate crisis. My thesis focused on what effect crisis framing has on environmental governance, and through this exploration, I found that crisis framing processes are embedded and contested within governance across multiple levels. While crisis may provide a pivoting point to transformative climate policy, this connection cannot be assumed. The impact of crisis frames depends on how actors in political, social, and economic sectors interpret them. Climate crisis events such as mass coral bleaching may create convergence over the problem, but the solutions remain varied, complex, uncertain, and contested. Looking forward, if a shift in perspectives is occurring related to the Great Barrier Reef, a shift may also be happening elsewhere, creating a need to re-focus research toward perspectives about solutions, and what transformation means and looks like for communities, nations, and the world.

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8. APPENDIX

Appendix A – Supplementary material from Chapter Six

Figure A.1 Community/civil society intervention comparisons

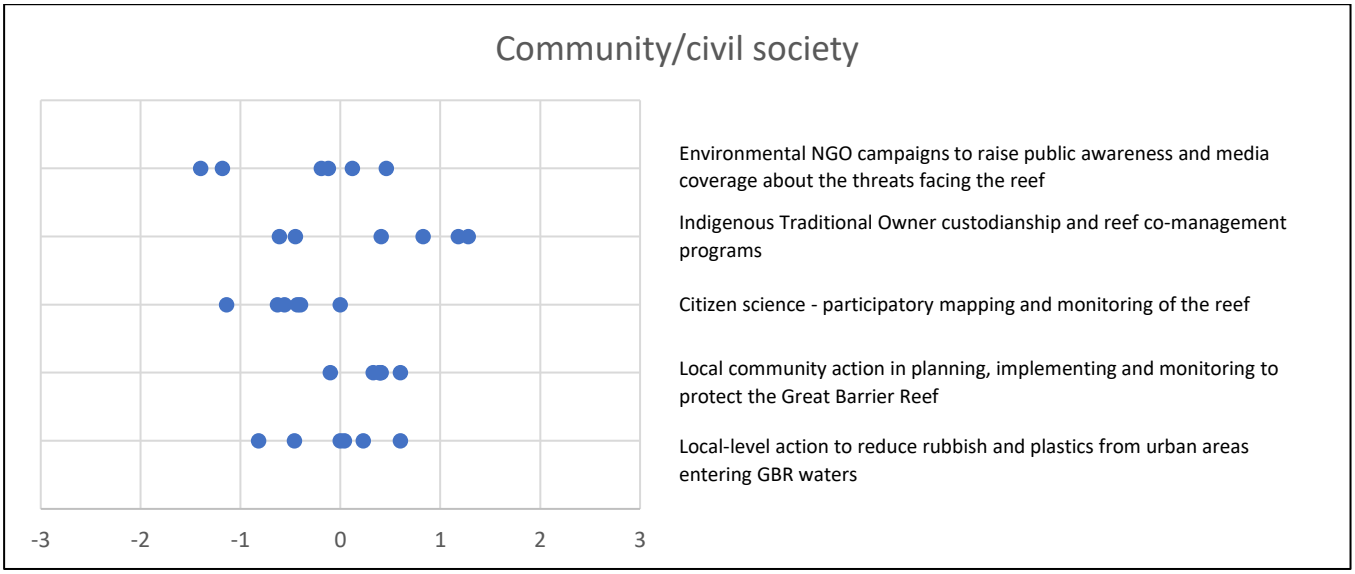

Figure A.2 Governing institutions intervention comparisons

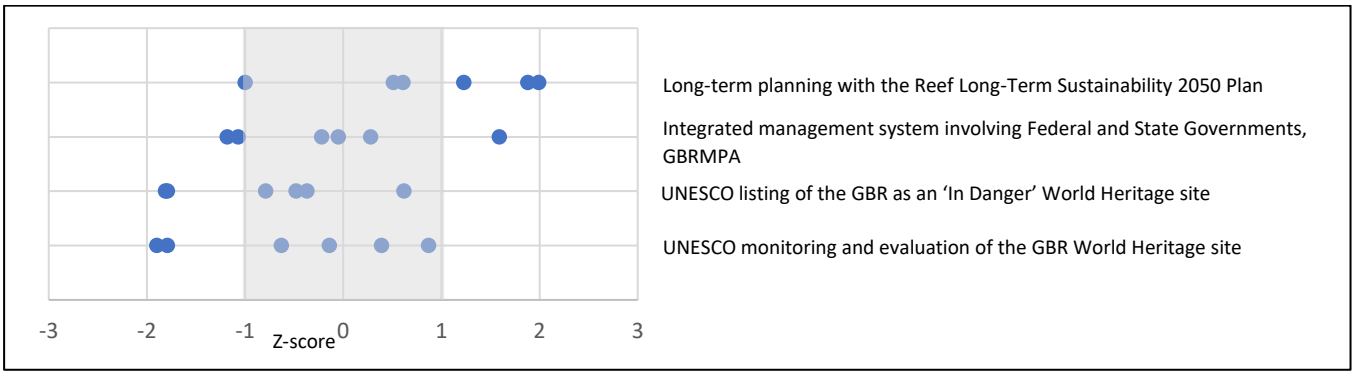

Figure A.3 Marine Park interventions intervention comparisons

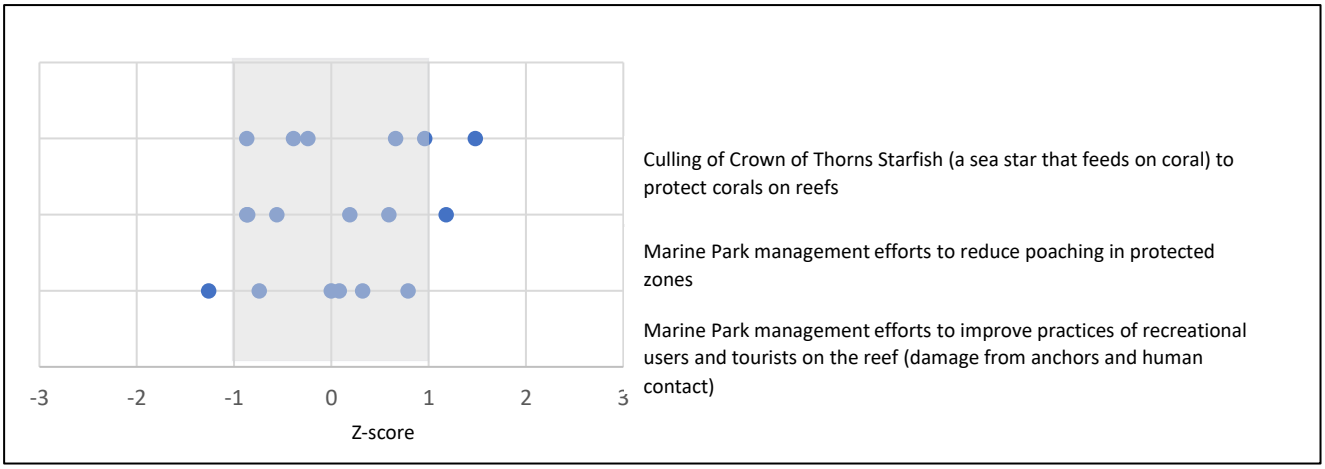

Figure A.4 Catchment water quality interventions intervention comparisons