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**Risk? Crisis? Emergency? Implications of the new climate emergency framing for governance and policy**

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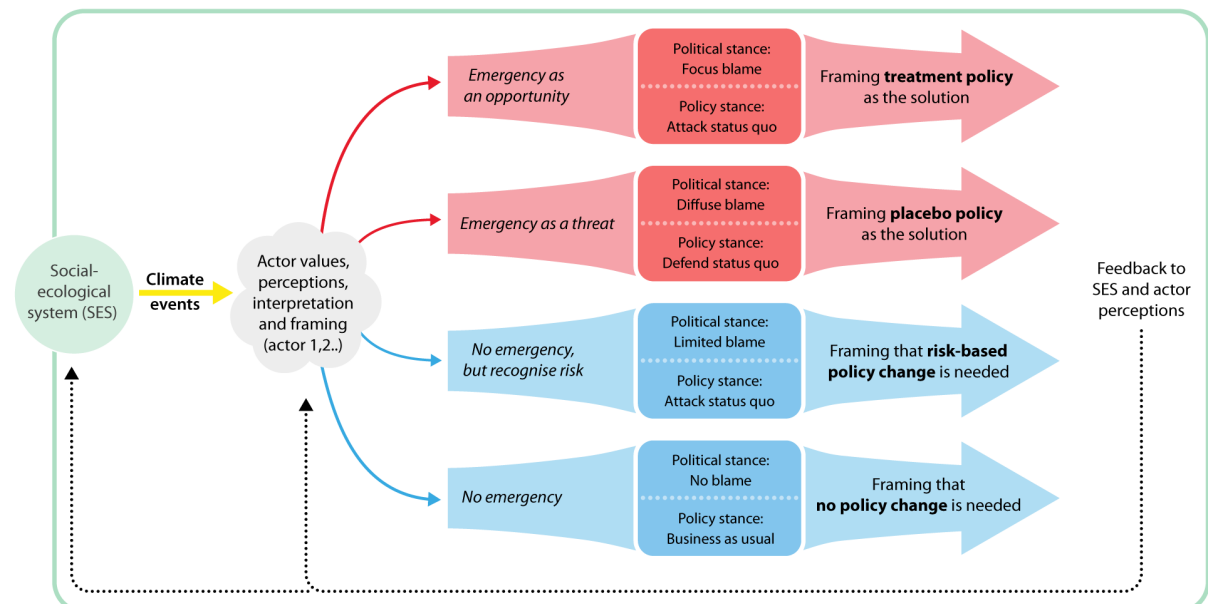
# Risk? Crisis? Emergency? Implications of the new climate emergency framing for governance and policy

## Abstract

The term ‘climate emergency’ represents a new phase in climate change framing that many hope will invigorate more climate action. Yet there has been relatively little discussion of how the new emergency framing might shape broader governance and policy. In this Advanced Review, we critically review and synthesise existing literature on crisis and emergency to inform our understanding of how this new shift might affect governance and policy. Specifically, we explore the literature on crisis governance and policy to argue that there is no simple answer to whether the ‘climate emergency’ framing will be supportive of climate governance and policy; rather more work needs to be done to understand how different political actors respond according to their perceptions, interests and values. To assist this endeavour, we develop a typology of four policy pathways, ranging from ‘no emergency’, to ‘no emergency, but recognise risk’, ‘emergency as a threat’ and ‘emergency as an opportunity’. We highlight the need to consider the effects of multiple and overlapping emergency frames, using the example of the intersection of climate change and COVID-19. Finally, we suggest new interdisciplinary research directions for critically analysing and refining this new phase of climate change framing.

## Graphical/Visual Abstract

**Caption: Framing climate emergencies and policy responses in social-ecological systems**



# Risk? Crisis? Emergency? Implications of the new climate emergency framing for governance and policy

## 1. INTRODUCTION

From its origins in climate activism, the climate emergency declaration has now become a symbol of serious climate mobilization. In 2016, the term first came to be used by mainstream media outlets (such as *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, 1,488 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 percent, 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., 2019). 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 mobilization 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, we 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.

We 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, we used a critical review methodology to analytically examine the quality of the literature and draw together influential concepts into a new model that synthesises and extends existing thinking on the topic (Grant & Booth, 2009). As our primary focus was emergency framing, we conducted a review of crisis and emergency literature. We focused on peer-reviewed, published scholarship by searching Google Scholar, Web of Science and JSTOR databases using the key words “risk” “crisis”, “emergency”. We 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 we then followed up additional noteworthy contributions to the field outside of online databases, such as Rosenthal, Boin, & Comfort's book *Managing Crises: Threats, Dilemmas, Opportunities* (2001). We 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 we have also included here an illustrative selection of key authors and works on risk as background to our discussion and analysis. As the risk literature in the social sciences is extensive, but not central to our discussion, we have not conducted a comprehensive review of risk. Rather we have sought to highlight the general risk and climate risk literature only where it is relevant to our discussion of framing, governance and policy. Further, while important, we have not specifically engaged with the immediate post-crisis response and disaster management literature, because our 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).

We begin the review with a brief illustrative discussion of risk, as ‘climate risk’ has been a dominant climate change frame, and follow this with our in-depth review of crisis and emergency framing, drawing upon relevant climate change examples throughout. Our critical review seeks to understand 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. RISK AS 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. We therefore begin our 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 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 outcomes. This is because, until very recently, the dominant frame for climate change was that it is a risk in the future.

Table 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 makes 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, 1994). 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, Renn, Begg, & Kuhlicke, 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 communities outside of traditional boundaries, 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 have 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’. We 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 1. Understanding risk in historical and contemporary scholarship (selected works)**

<b>Discipline</b>	<b>Risk Concept</b>	<b>Frame</b>	<b>Key Scholars</b>
<b>Economics</b>	Risk as a probability	Investment return; financial institutions	Knight, 1921 Benaroch et al., 2006
<b>Sociology</b>	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
	Risk governance needs to include multiple knowledges including scientific, political, and public values	Multiple knowledges are needed to govern risk in society	Renn et al., 2011; Van Asselt & Renn, 2011
	Importance of trust and personal experience in public risk perception and response	Public risk perception and relationship to behavioral responses	Wachinger, et al 2013
<b>Anthropology</b>	Risk affects how responsibility and blame are attributed; risk perception is cultural	Existing social structures affect risk perceptions and beliefs (cultural theory)	Douglas, 1992
<b>Psychology</b>	Risk perception	Risk and hazard perception and behaviour of individuals and groups	Renn & Rohmann, 2000
<b>Business and Management</b>	Risk as a management paradigm	Identification and control of risk for organizations; disaster risk management	Crouhy et al., 2000 Wisner, et al., 2012
<b>Public Administration</b>	Reputational risk	Reputational risk legitimized in risk management can have negative impacts	Rothstein, Huber, & Gaskell, 2006

<b>Political Ecology</b>	Risk and blame can be controlled by powerful actors	Ecological risk can be used to marginalize the less powerful	Collins, 2008
<b>Political Science</b>	Risk management as an organizational 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
<b>Human Geography</b>	Anticipation of risk creates geographies of ‘the future’	Risk as a means of understanding ‘the future’	Anderson, 2010
<b>Science, Technology and Society</b>	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 decisionmaking  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
<b>Resilience and sustainability</b>	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
<b>Media and Communications</b>	Framing and communication of risk	Media effects on public risk perception	Schäfer & Neill, 2017

### 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), organizational psychology (Brockner & James, 2008) and organizational crisis management (Nunamaker, Weber, & Chen, 1989) (Table 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 organizational 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 politicization, whereby social actors treat it differently to an everyday occurrence ('t Hart & Boin, 2001).

**Table 2. Understanding crisis in historical and contemporary scholarship**

Field/Discipline	Crisis Concept	Frame	Key Scholars
<b>Political Science</b>	Crisis decision-making	Decision-making by intergovernmental organizations and nation states in a crisis	Allison, 1969
<b>Disaster Management and Governance</b>	Disaster crisis management	Disaster/emergency responses by organizations	Quarantelli, 1988
		Adaptive governance of disaster	Hurlbert, 2017
<b>Organizational Crisis Management</b>	Crisis planning and response	Crisis planning tools for managing organizational crises	Nunamaker et al., 1989
<b>Crisis Management</b>	Compound crises	Crises as both acute/instant as well as compound/creeping	Porfiriev, 2000
<b>Public Administration</b>	Crisis in public policy	Impact of crises on institutions, policy and politics	't Hart & Boin, 2001 Boin et al., 2009
		Crisis evaluation	McConnell, 2011
		Cascading crises	Galaz et al., 2011
		Transboundary crisis management	Boin & Lodge, 2016
<b>Human Geography</b>	Emergency is the political motif of our era	Emergency narratives are over-deterministic	Adey, 2016; Adey, 2020
	Emergencies are characterised by time intervals and hope that the responses can end the threat	Governance of emergencies as tools for mobilization	Anderson, 2016; Anderson, 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 legitimise 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
<b>Organizational Psychology</b>	Crisis as opportunity	Perceptions and response to crisis as an opportunity for executive leadership	Brockner & James, 2008
<b>Public Relations</b>	Crisis management	Defining crisis management	Jaques, 2009



### 3.1 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, e.g., a 'state of emergency' (Table 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 behaviours 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).

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 criticised 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 mobilization (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 (Fielding, 2020; Morris, 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 mobilizing 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; they can also be compound or creeping – such as chronic environmental 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 ('t Hart & Boin, 2001; Porfiriev, 2000). For chronic environmental problems, politicization 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 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, non-linear 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 organizational

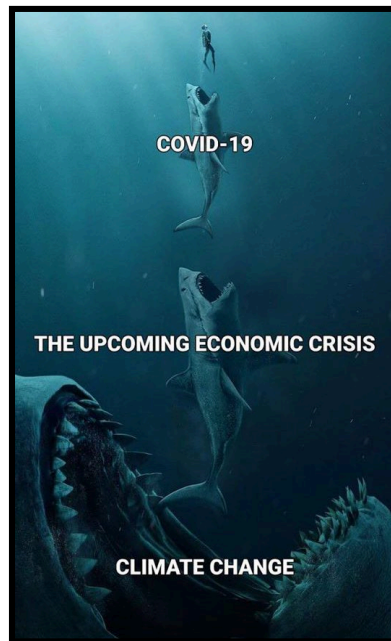
change to improve future performance after a crisis. Such challenges underscore the need to think more carefully about the potential governance and policy implications of the new climate emergency framing.

**Table 3. Moving from a future climate risk frame, to a current climate crisis and emergency frame**

<b>Future Risk Frame</b>	 <b>Current Crisis and Emergency Frame</b>
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

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 US 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 1).

**Figure 1. Social media meme framing global crises in health, economy and climate as interconnected** (Source: Facebook, 5th of April, 2020)



#### **4. 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 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, Sabatier, & McQueen, 2009). Public policy theory suggests that emergencies often disturb stable policy sub-systems: 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 favour 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 & Vermeule (2009) found that both the Global Financial Crisis and 9/11 saw increased executive power relative to the legislature in the USA. 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 securitization of climate change. Securitization 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, Ginn, & Ghaleigh, 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 legitimize 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 4. Emergency Climate Governance**

<b>Common characteristics of emergency governance</b>
<p>Context:</p> <ul style="list-style-type: none"> <li>• High issue salience/attention in media and society</li> <li>• Circumstances are considered 'exceptional'</li> <li>• Dominant narratives (that may marginalise alternative worldviews/approaches)</li> <li>• Public awareness of new crisis-specific terminology</li> <li>• Reduced focus on non-emergency related issues</li> <li>• High political pressure for action</li> </ul> <p>Actors:</p> <ul style="list-style-type: none"> <li>• Smaller, more powerful group of key decision makers</li> <li>• Executive powers increase relative to legislature</li> <li>• Power balance of policy sub-systems can change: winners and losers</li> <li>• Reduced partisanship</li> </ul> <p>Decisions:</p> <ul style="list-style-type: none"> <li>• Speed/urgency</li> <li>• Non-incremental change</li> <li>• Large shifts in resources</li> <li>• Radical policies and legislation with less initial oversight</li> <li>• Legacies that shape 'post-emergency' governance</li> </ul>

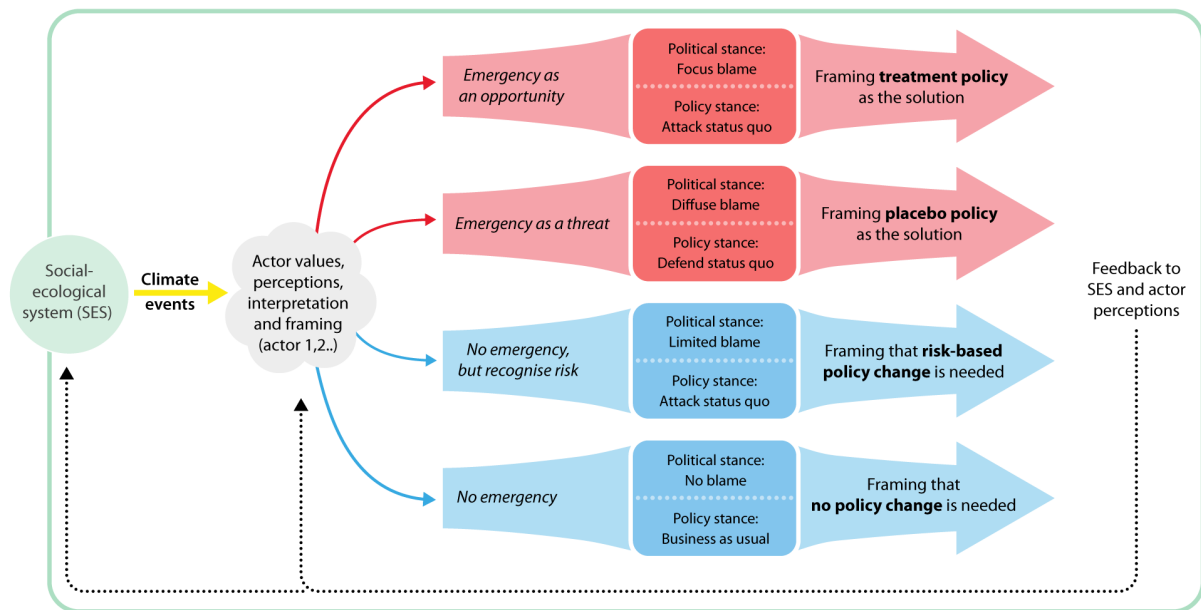
#### 4.1 Multiple policy pathways for the climate emergency

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 organizations 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, we show the social construction of climate emergency within a social-ecological system (Hughes et al., 2019). In this conceptualization, 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; Fielding et al., 2020; Hornsey & Fielding, 2020) (Figure 2). Based on our review above, we therefore develop four common pathways for the climate emergency framing (Figure 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.

**Figure 2: ‘Framing climate emergencies and policy responses in social-ecological systems’** (based on Boin et al. (2009, p.84)—crisis pathways, McConnell (2019) and Morrison et al., (2020b) – public policy concepts, and Hughes et al., (2019) – social-ecological systems theory).



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., 2020a). 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 decarbonization 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., 2020b), as decarbonization framings may also be perceived as a political threat by certain industries and organized labour 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 US have committed 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 speculative coral restoration strategies while subsidising the expansion of fossil fuels (Lubell & Morrison, 2021; Morrison et al., 2020b). 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).

## **5. 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, we have suggested that much can be learned from crisis and emergency literature and how past emergencies have shaped governance and policy. We 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, we 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. We identified four pathways commonly found in the literature: ‘no emergency’, to ‘no emergency, but recognise 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, we believe there are three key issues that need to be prioritized 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 1). However, while scholars are mobilizing to understand how compounding 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.

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### Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

### References

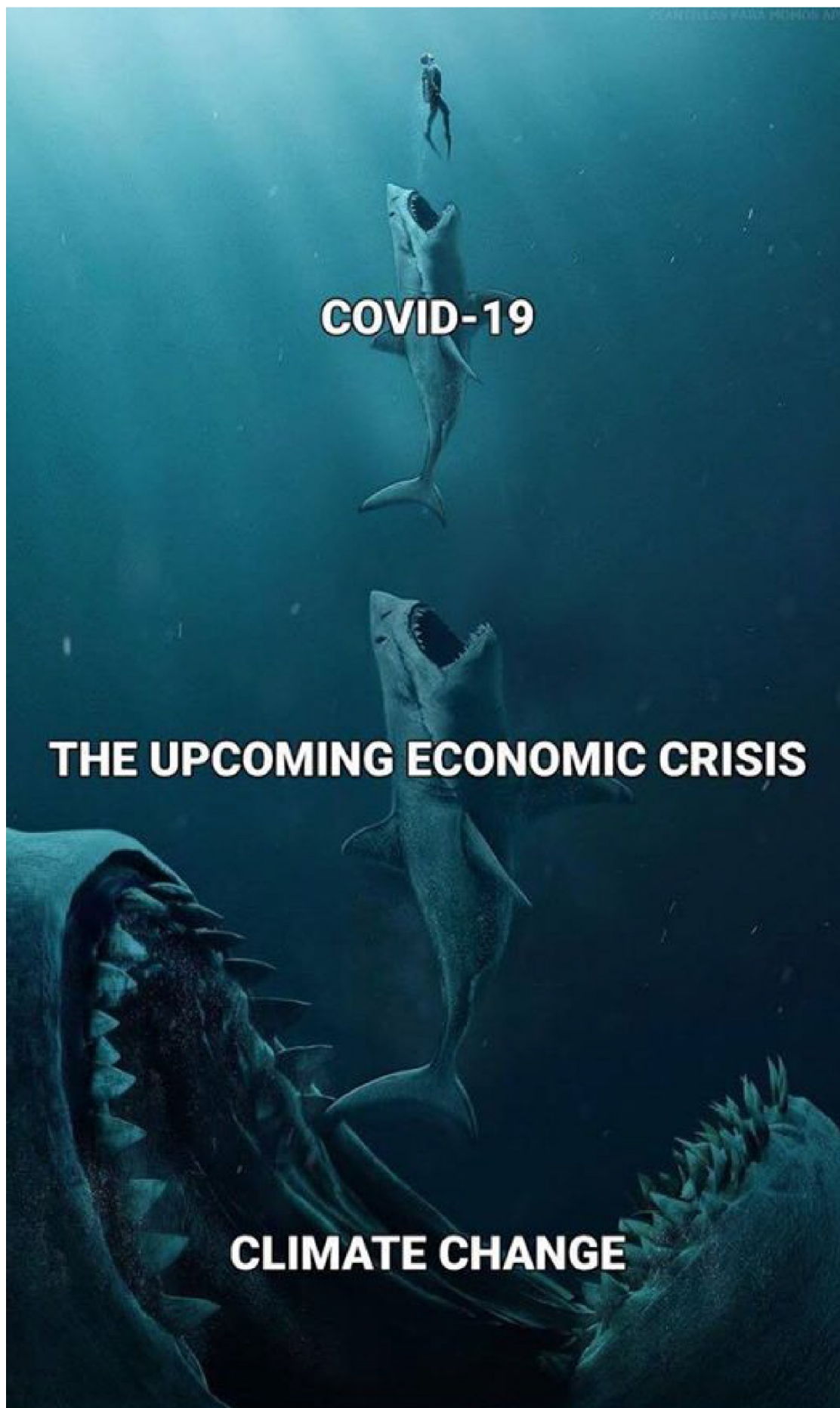
- 't Hart, P., & Boin, A. (2001). Between crisis and normalcy: the long shadow of post-crisis politics. In U. Rosenthal, A. Boin, & L. Comfort (Eds.), *Managing Crises: Threats, Dilemmas, Opportunities* (pp. 28–46). Illinois: Charles C Thomas.
- Adey, P. (2016). Emergency Mobilities. *Mobilities*, 11(1), 32–48. <https://doi.org/10.1080/17450101.2015.1103533>
- Adey, P. (2020). Shoe: Towards a promiscuous politics of emergency evacuation mobility. *Environment and Planning D: Society and Space*, 38(2), 364–382. <https://doi.org/10.1177/0263775820904966>
- Aklin, M., & Urpelainen, J. (2013). Debating clean energy: frames, counter frames, and audiences. *Global Environmental Change*, 23(5), 1225–1232. <https://doi.org/10.1016/j.gloenvcha.2013.03.007>
- Allison, G. T. (1969). Conceptual models and the Cuban missile crisis. *The American Political Science Review*, 63(3), 689–718.
- Anderson, B. (2010). Preemption, precaution, preparedness: anticipatory action and future geographies. *Progress in Human Geography*, 34(6), 777–798.
- Anderson, B. (2016). Governing emergencies : the politics of delay and the logic of response, 14–26. <https://doi.org/10.1111/tran.12100>
- Anderson, B. (2017). Emergency futures: exception, urgency, interval, hope. *Sociological Review*, 65(3), 463–477. <https://doi.org/10.1111/1467-954X.12447>

- Anderson, B., & Adey, P. (2012). Governing events and life: "emergency" in UK Civil Contingencies. *Political Geography*, 31(1), 24–33. <https://doi.org/10.1016/j.polgeo.2011.09.002>
- Aradau, C., & van Munster, R. (2011). *Politics of Catastrophe: Genealogies of the Unknown*. London and New York: Routledge.
- Asayama, S., Bellamy, R., Geden, O., Pearce, W., & Hulme, M. (2019). Why setting a climate deadline is dangerous. *Nature Climate Change*, 9(8), 570–572. <https://doi.org/10.1038/s41558-019-0543-4>
- Atteridge, A., & Remling, E. (2018). Is adaptation reducing vulnerability or redistributing it? *Wiley Interdisciplinary Reviews: Climate Change*, 9(1). <https://doi.org/10.1002/wcc.500>
- Beck, U. (1992). *Risk Society: Towards a New Modernity*. London: Sage.
- Benaroch, M., Lichtenstein, Y., & Robinson, K. (2006). Real options in information technology risk management: an empirical validation of risk-option relationships. *MIS Quarterly*, 30(4), 827–864.
- Benford, R., & Snow, D. (2000). Framing processes and social movements: an overview and assessment. *Annual Review of Sociology*, 26, 611–639.
- Boin, A., 't Hart, P., Stern, E. ., & Sundelius, B. (2017). *The Politics of Crisis Management: Public Leadership Under Pressure* (2nd ed.). Cambridge: Cambridge University Press.
- Boin, A., Hart, P., & McConnell, A. (2009). Crisis exploitation: political and policy impacts of framing contests. *Journal of European Public Policy*, 16(1), 81–106. <https://doi.org/10.1080/13501760802453221>
- Boin, A., & Lodge, M. (2016). Designing resilient institutions for transboundary crisis management: a time for public administration. *Public Administration*, 94(2), 289–298. <https://doi.org/10.1111/padm.12264>
- Brockner, J., & James, E. (2008). Toward an understanding of when executives see crisis as opportunity. *The Journal of Applied Behavioral Science*, 44(1), 94–115. <https://doi.org/10.1177/0021886307313824>
- Brzoska, M. (2009). The securitization of climate change and the power of conceptions of security. *Security and Peace*, 137–145.
- Collins, T. W. (2008). The political ecology of hazard vulnerability: marginalization, facilitation and the production of differential risk to urban wildfires in Arizona's White Mountains. *Journal of Political Ecology*, 15, 21–43.
- Crouhy, M., Galai, D., & Mark, R. (2000). A comparative analysis of current credit risk models. *Journal of Banking & Finance*, 24, 59–117.
- Dawson, M. (2015). The legal and political accountability structure of 'post-crisis' EU economic governance\*. *Journal of Common Market Studies*, 53(5), 976–993. <https://doi.org/10.1111/jcms.12248>
- Fielding, K. S., Hornsey, M. J., Thai, H. A., & Toh, L. L. (2020). Using ingroup messengers and ingroup values to promote climate change policy. *Climatic Change*, 158, 181–199.
- Flegal, J. A., Hubert, A., Morrow, D. R., & Moreno-cruz, J. B. (2019). Solar geoengineering: social science, legal, ethical, and economic frameworks. *Annual Review of Environment and Resources*, 44, 399–423.
- Funtowicz, S. (2020). From risk calculations to narratives of danger. *Climate Risk Management*, 27, 100212. <https://doi.org/10.1016/j.crm.2020.100212>
- Funtowicz, S. O., & Ravetz, J. R. (1993). Science for the post-normal age. *Futures*, 25(7), 739–755. [https://doi.org/10.1016/0016-3287\(93\)90022-L](https://doi.org/10.1016/0016-3287(93)90022-L)
- Galaz, V., Moberg, F., Olsson, E., Paglia, E., & Parker, C. (2011). Institutional and political leadership dimensions of cascading ecological crises. *Public Administration*, 89(2), 361–380. <https://doi.org/10.1111/j.1467-9299.2010.01883.x>
- Gaventa, J. (2006). Finding the spaces for change: a power analysis. *IDS Bulletin*, 37(6), 23–33. <https://doi.org/10.1111/j.1759-5436.2006.tb00320.x>
- Giddens, A. (1990). *The Consequences of Modernity*. Cambridge: Polity Press.
- Giddens, A. (1999). Risk and responsibility. *The Modern Law Review*, 62(1), 1–35. <https://doi.org/10.1111/j.1468-2230.2008.00711.x>
- Grant, M. J., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information and Libraries Journal*, 26(2), 91–108. <https://doi.org/10.1111/j.1471-1842.2009.00848.x>
- Hart, P. S. (2011). One or many? The influence of episodic and thematic climate change frames on policy preferences and individual behavior change. *Science Communication*, 33(1), 28–51. <https://doi.org/10.1177/1075547010366400>
- Hood, C., Jennings, W., & Copeland, P. (2016). Blame Avoidance in Comparative Perspective:

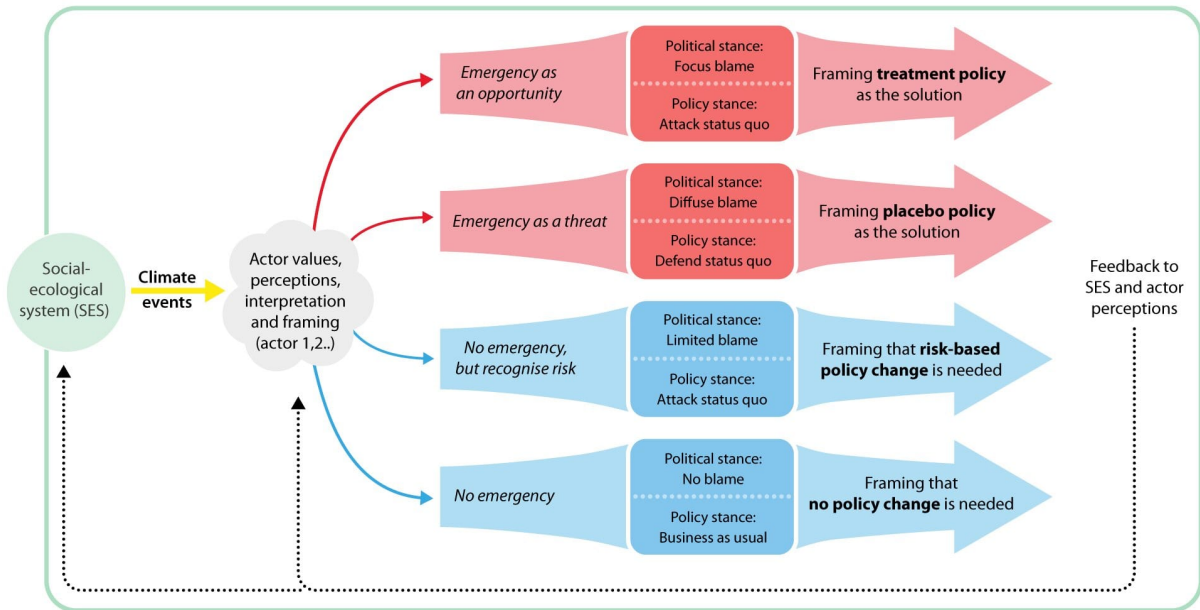
- Reactivity, Staged Retreat and Efficacy. *Public Administration*, 94(2), 542–562.  
<https://doi.org/10.1111/padm.12235>
- Hornsey, M. J., & Fielding, K. S. (2020). Understanding (and reducing) inaction on climate change. *Social Issues and Policy Review*, 14(1), 3–35. <https://doi.org/10.1111/sipr.12058>
- Hughes, T. P., Gunderson, L. H., Folke, C., Baird, A. H., Bellwood, D., Berkes, F., ... Worm, B. (2019). Adaptive management of the Great Barrier Reef and the Grand Canyon World Heritage Areas. *AMBIO*, 36(7), 586–592.
- Hulme, M., Lidskog, R., White, J., & Standing, A. (2020). Social scientific knowledge in times of crisis: What climate change can learn from coronavirus (and vice versa). *WIREs Climate Change*, 11, 1–5. <https://doi.org/10.1002/wcc.656>
- Hulme, Michael. (2019). Climate Emergency Politics Is Dangerous. *Issues in Science & Technology*, 36(1), 23–25.
- Hurlbert, M. (2017). *Adaptive Governance of Disaster: Drought and Flood in Rural Areas* (1st ed.). Springer International Publishing.
- Hurlbert, M., & Gupta, J. (2016). Adaptive governance, uncertainty, and risk: policy framing and responses to climate change, drought, and flood. *Risk Analysis*, 36(2), 339–356.  
<https://doi.org/10.1111/risa.12510>
- Jaques, T. (2009). Issue and crisis management: quicksand in the definitional landscape. *Public Relations Review*, 35(3), 280–286.
- Jasanoff, S., & Wynne, B. (1998). Science and decisionmaking. In S. Rayner & E. Malone (Eds.), *Human Choice and Climate Change: The Societal Framework*. Columbus: Battelle Press.
- Junk, W. M., & Rasmussen, A. (2018). Framing by the flock: collective issue definition and advocacy success. *Comparative Political Studies*, 52(4), 483–513.  
<https://doi.org/10.1177/0010414018784044>
- Kingdon, J. (1984). *Agendas, Alternatives, and Public Policies*. Boston: Little, Brown and Company.
- Knight, F. (1921). *Risk, Uncertainty and Profit*. Boston: Houghton Mifflin Company.
- Krause, R. M. (2011). Symbolic or substantive policy? Measuring the extent of local commitment to climate protection. *Environment and Planning C: Government and Policy*, 29, 46–63.  
<https://doi.org/10.1068/c09185>
- Laker, L. (2020, April 21). Milan announces ambitious scheme to reduce car use after lockdown. *The Guardian*.
- Lebel, L., Manuta, J. B., & Garden, P. (2011). Institutional traps and vulnerability to changes in climate and flood regimes in Thailand. *Regional Environmental Change*, 11, 45–58.  
<https://doi.org/10.1007/s10113-010-0118-4>
- Lemos, M. C., Klenk, N., Kirchhoff, C. J., Morrison, T., Bremer, S., Fischer, A. P., ... Vincent, K. E. (2020). Grand Challenges for Climate Risk Management. *Frontiers in Climate*, 2(December), 1–4. <https://doi.org/10.3389/fclim.2020.605206>
- Lubell, M., & Morrison, T. H. (2021). Institutional navigation for polycentric sustainability governance. *Nature Sustainability*. <https://doi.org/10.1038/s41893-021-00707-5>
- Markusson, N., Ginn, F., & Ghaleigh, N. S. (2014). 'In case of emergency press here': framing geoengineering as a change †. *Wiley Interdisciplinary Reviews: Climate Change*, 5(March/April).  
<https://doi.org/10.1002/wcc.263>
- McConnell, A. (2011). Success? Failure? Something in-between? A framework for evaluating crisis management. *Policy and Society*, 30(2), 63–76. <https://doi.org/10.1016/j.polsoc.2011.03.002>
- McConnell, A. (2019). The use of placebo policies to escape from policy traps. *Journal of European Public Policy*, 1–20. <https://doi.org/10.1080/13501763.2019.1662827>
- McConnell, A. (2020). The politics of crisis terminology. In *Oxford Research Encyclopedia, Politics* (pp. 181–208). Oxford University Press. <https://doi.org/10.2307/j.ctt2005s20.12>
- Morris, B. S., Chrysochou, P., Karg, S. T., & Mitkidis, P. (2020). Optimistic vs. pessimistic endings in climate change appeals. *Humanities and Social Sciences Communications*, 7(1), 1–8.  
<https://doi.org/10.1057/s41599-020-00574-z>
- Morrison, T.H., Adger, W.N., Brown, K., Hettiarachchi, M., Huchery, C., Lemos, M.C. and Hughes, T.P., 2020a. Political dynamics and governance of World Heritage ecosystems. *Nature Sustainability*, 3(11), pp.947-955. <https://doi.org/10.1038/s41893-020-0568-8>
- Morrison, T H., Adger, N., Barnett, J., Brown, K., Possingham, H., & Hughes, T. (2020b). Advancing coral reef governance into the anthropocene. *One Earth*, 2(1), 64–74.  
<https://doi.org/10.1016/j.oneear.2019.12.014>
- Morrison, T H., Hughes, T. P., Adger, W. N., Brown, K., Barnett, J., & Lemos, M. C. (2019). Save reefs to rescue all ecosystems. *Nature*, 573, 333–336. <https://doi.org/10.1038/d41586-019->

- Morrison, Tiffany H., Adger, W. N., Brown, K., Lemos, M. C., Huitema, D., & Hughes, T. P. (2017). Mitigation and adaptation in polycentric systems: sources of power in the pursuit of collective goals. *WIREs Climate Change*, 8(5), 1–16. <https://doi.org/10.1002/wcc.479>
- Nohrstedt, D., Mazzoleni, M., Parker, C. F., & Baldassarre, G. Di. (2021). Exposure to natural hazard events unassociated with policy change for improved disaster risk reduction. *Nature Communications*, 12(193). <https://doi.org/10.1038/s41467-020-20435-2>
- Nunamaker, J. F., Weber, E. S., & Chen, M. (1989). Organizational crisis management systems: planning for intelligent action. *Journal of Management Information Systems*, 5(4), 7–32.
- Olsson, E. (2009). Responsibility framing in a 'climate change induced' compounded crisis: facing tragic choices in the Murray — Darling Basin. *Environmental Hazards*, 8(3), 226–240. <https://doi.org/10.3763/ehaz.2009.0019>
- Phillips, C. A., Caldas, A., Cleetus, R., Dahl, K. A., Declet-barreto, J., Licker, R., ... Carlson, C. J. (2020). Compound climate risks in the COVID-19. *Nature Climate Change*, 10, 586–588. <https://doi.org/10.1038/s41558-020-0804-2>
- Porfiriev, B. (2000). Preparing for Creeping Crises: The Case of the Samara Region. *Journal of Contingencies and Crisis Management*, 8(4), 218–222.
- Posnerf, E. A., & Vermeule, A. (2009). Crisis governance in the administrative state: 9/11 and the financial meltdown of 2008. *The University of Chicago Law Review*, 76(4), 1613–1682.
- Quarantelli, E. L. (1988). Disaster crisis management: a summary of research findings. *Journal of Management Studies*, 25(4), 373–385.
- Renn, O., Klinke, A., & Asselt, M. Van. (2011). Coping with complexity, uncertainty and ambiguity in risk governance: a synthesis. *AMBIO*, 40, 231–246. <https://doi.org/10.1007/s13280-010-0134-0>
- Renn, O., & Rohrman, B. (2000). *Cross-Cultural Risk Perception: A Survey of Empirical Studies*. (O. Renn & B. Rohrman, Eds.). London: Springer US.
- Rosenthal, U., Boin, A., & Comfort, L. (2001). *Managing Crises: Threats, Dilemmas, Opportunities*. (U. Rosenthal, A. Boin, & L. Comfort, Eds.). Illinois: Charles C Thomas.
- S, S., & Smyth, S. (2021). Supreme emergencies and public accountability: the case of procurement in the UK during the Covid-19 pandemic. *Accounting, Auditing & Accountability Journal*, ahead-of-p(ahead-of-print). <https://doi.org/10.1108/AAAJ-08-2020-4860>
- Sabatier, P. (2007). The advocacy coalition: innovations and clarifications. In *Theories of the Policy Process* (2nd ed., pp. 189–220). Boulder: Westview.
- Sellers, F., & Freedman, a. (2020, June 7). Hurricane preparedness meets coronavirus caution as Cristobal bears down. *Washington Post*.
- Sillmann, J., Lenton, T. M., Levermann, A., Ott, K., Hulme, M., Benduhn, F., & Horton, J. B. (2015). Climate emergencies do not justify engineering the climate. *Nature Climate Change*, 5, 290–292. <https://doi.org/10.1038/nclimate2539>
- Stecula, D. A., & Merkley, E. (2019). Framing climate change: economics, ideology, and uncertainty in American news media content from 1988 to 2014. *Frontiers in Communication*, 4(6), 1–15. <https://doi.org/10.3389/fcomm.2019.00006>
- Stephenson, E., Doukas, A., & Shaw, K. (2012). “Greenwashing gas: might a ‘transition fuel’ label legitimize carbon-intensive natural gas development?” *Energy Policy*, 46(2012), 452–459. <https://doi.org/10.1016/j.enpol.2012.04.010>
- Stirling, A. (2008). “Opening up” and “closing down” power, participation, and pluralism in the social appraisal of technology. *Science, Technology, & Human Values*, 33(2), 262–294.
- Van Asselt, M. B. A., & Renn, O. (2011). Risk governance. *Journal of Risk Research*, 14(4), 431–449. <https://doi.org/10.1080/13669877.2011.553730>
- Wachinger, G., Renn, O., Begg, C., & Kuhlicke, C. (2013). The risk perception paradox — implications for governance and communication of natural hazards. *Risk Analysis*, 33(6), 1049–1065. <https://doi.org/10.1111/j.1539-6924.2012.01942.x>
- Weible, C. M., Sabatier, P. A., & McQueen, K. (2009). Themes and variations: taking stock of the advocacy coalition framework. *The Policy Studies Journal*, 37(1), 121–140.
- Wisner, B., Gaillard, J. C., & Kelman, I. (2012). Framing disaster: theories and stories seeking to understand hazards, vulnerability and risk. In B. Wisner, J. C. Gaillard, & I. Kelman (Eds.), *The Routledge Handbook of Hazards and Disaster Risk Reduction* (pp. 18–33). New York: Routledge. <https://doi.org/10.4324/9780203844236.ch3>
- Wynne, B. (1995). May the sheep safely graze? A reflexive view of the expert-lay knowledge divide. In S. Lash, B. Szerszynski, & B. Wynne (Eds.), *Risk, Environment and Modernity: Towards a New Ecology* (pp. 44–83). SAGE.

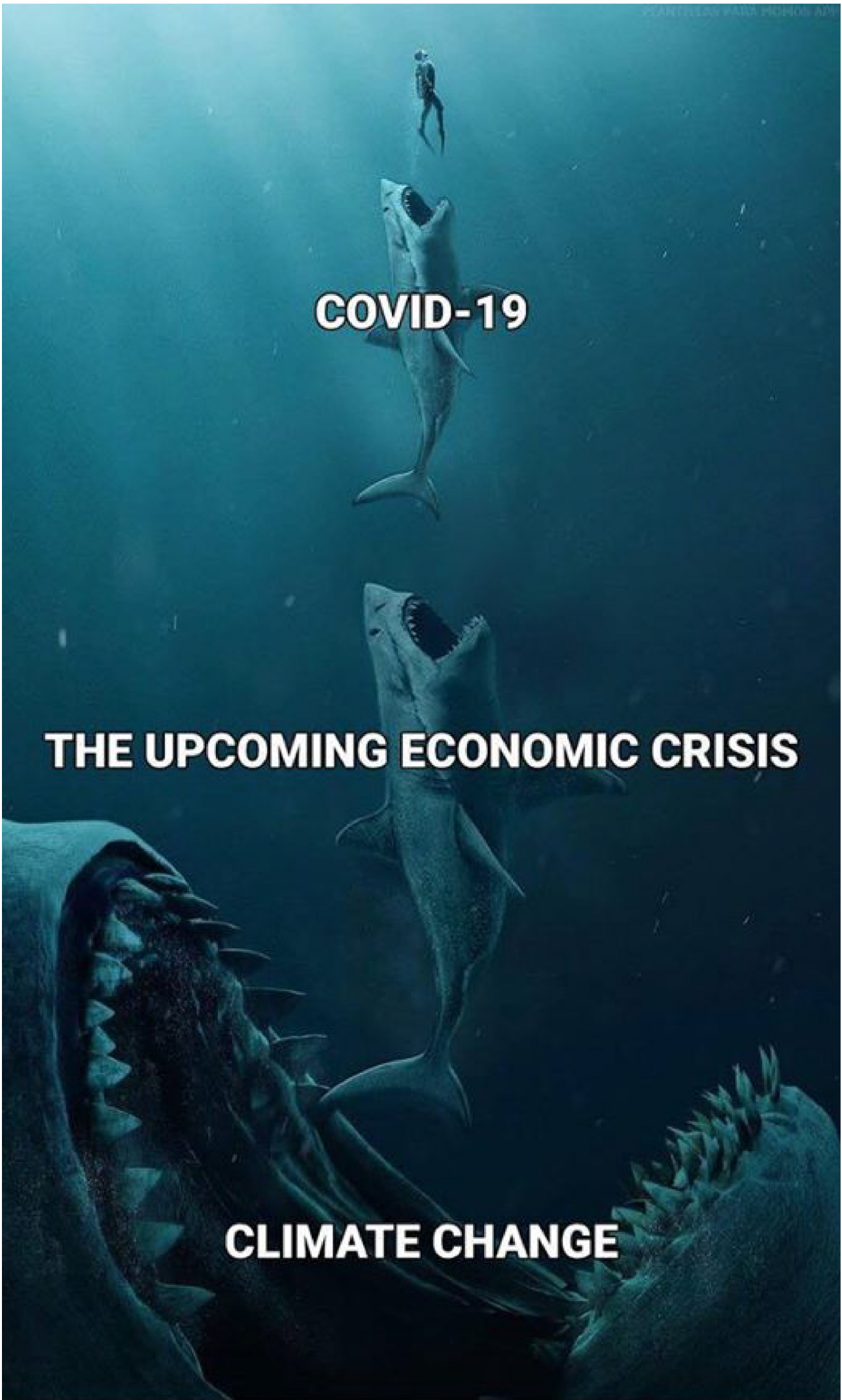












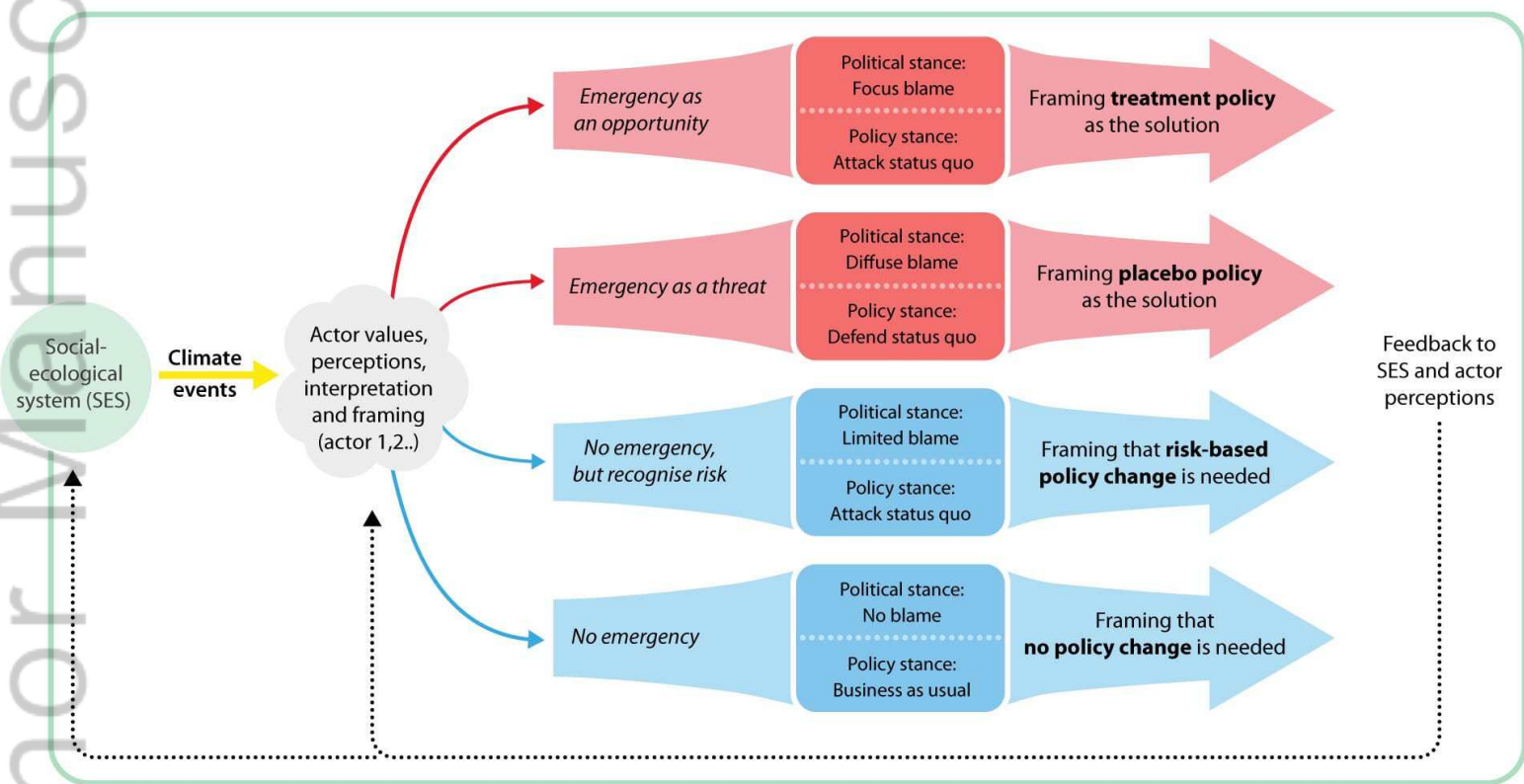
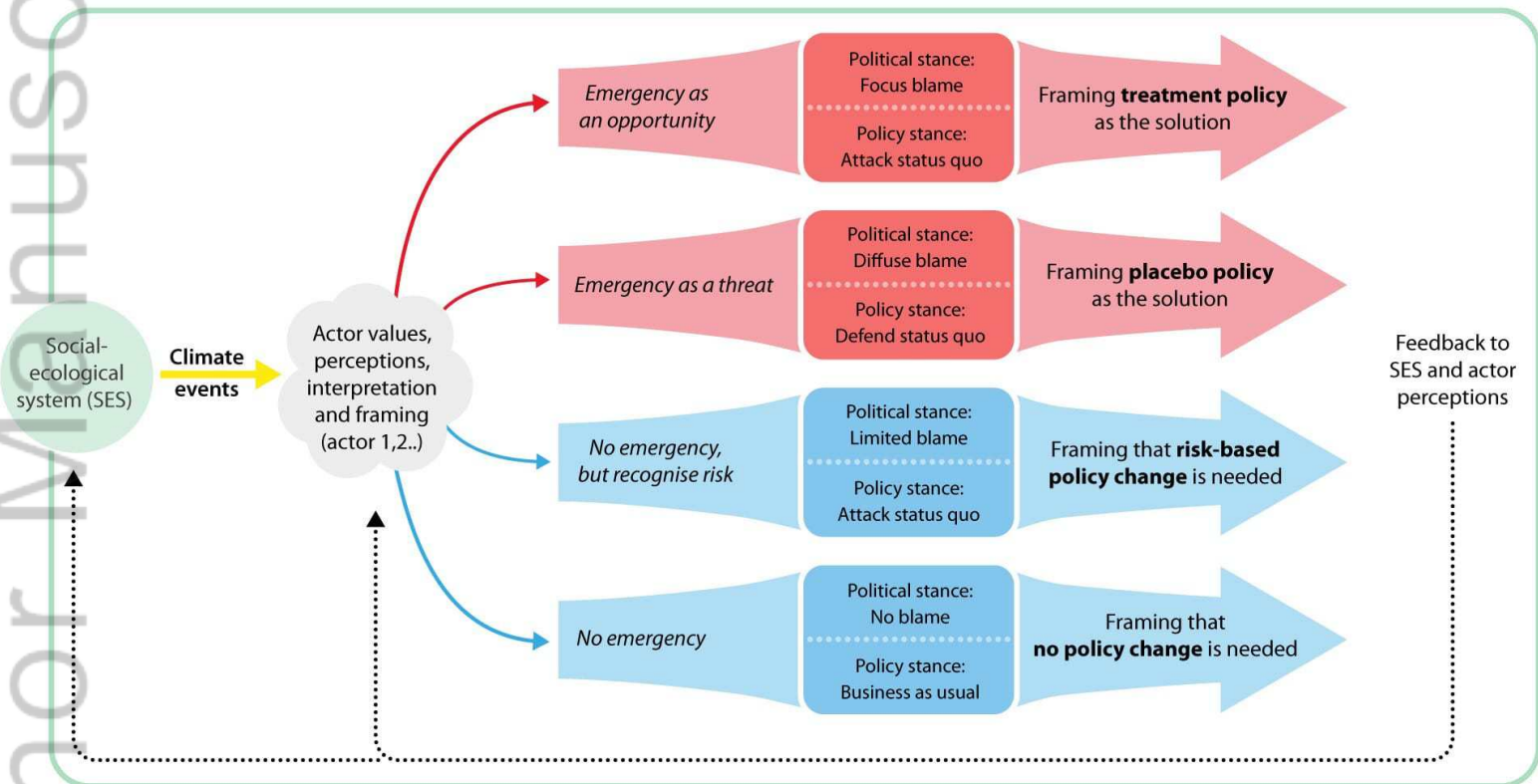


Figure 2.jpg



Graphical abstract.jpg