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Stage 1 concept review
Framing challenges for sharing responsibility
A report of the Sharing Responsibility project

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Final Report

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Executive summary

Introduction

This report presents key findings from the first stage of the *Sharing Responsibility* project, which aims to support stakeholders of the Australian fire and emergency management (FEM) sector to make decisions about how to address the 'wicked' problem of sharing responsibility for risk management and community safety. The goal of the first stage of the project—the 'Stage 1 concept review'—was to develop a conceptual framework to guide the *Sharing Responsibility* project that incorporated multiple ways of understanding and framing the underlying challenges of responsibility-sharing.

The idea of frames is an important one underpinning this report. Frames are the "underlying structures of belief, perception, and appreciation" (Schön & Rein, 1994, p. 23) that people use to interpret and understand complex issues. The way decision makers, researchers and other stakeholders frame a risk management problem shapes what solutions they see as most viable, which information they use to make decisions, and which arguments they deem legitimate (Vaughan & Seifert, 1992, p. 121). This report is based on the premise that reflecting on the impact of frames is important for developing a more nuanced understanding of the meaning of shared responsibility for Australian fire and emergency management.

Background

The Stage 1 concept review was carried out through a type of narrative literature review known as an interpretive, integrative review (Whittemore & Knafl, 2005). In order to capture the widest range of approaches used in research to frame responsibility-sharing challenges in risk management, the review included studies of risk management in a wide range of political systems, and across various sectors such as public health, transport, new technologies and policing.

In order to determine the scope of the review, the concept of responsibility needed to be examined. The idea of responsibility itself can be framed in different ways. In the context of sharing responsibility, views about <u>what</u> is being shared inevitably shape positions on <u>how</u> to share it. Four different but interrelated facets of responsibility are discernible in discussions across different disciplines, as well as in common usage of the term: obligation, accountability, causality and trustworthiness. A common emphasis in discussions of responsibility is its fundamental relationship with freedom and constraint. Three aspects of this relationship are highlighted in research literature: freedom of choice, constraint in acting, and capacity to act. A third important aspect of responsibility as an idea is its intricate relationship with risk. These two concepts are connected through the common importance of agency – or free choice - to both. As with responsibility, concepts of risk are often linked with the exercise of human choice through decision-making.

The Stage 1 concept review incorporated research studies that combined two broad but pivotal themes: risk management (Theme 1); and, responsibility-sharing issues (Theme 2). For theme 1, 'risk management' was interpreted broadly and included some scenarios that are not explicitly analysed through the lens of 'risk'. Theme 2 involved scenarios of collective risk management in which issues of how to share or distribute responsibility amongst the different parties involved were raised or addressed in some way.

Ten master frames

The Stage 1 concept review identified ten key ways that challenges for sharing responsibility in risk management are framed in research. Each of the ten frames represents a type of 'master frame' that is reflected by a collection of conceptually-related research theories and approaches. In the context of this report, the term 'master frame' is used to refer to common, shared ways of understanding the underlying challenges for sharing responsibility that are reflected by collections of conceptually-related theories in research.

i.   Social dilemma

The first master frame focuses on a fundamental responsibility-sharing challenge that plagues much collective action, known broadly as a social dilemma. The term social dilemma refers to a situation where individuals (or groups, firms, organizations or states) make choices that lead to short term, private gains but which create long term social costs that leave everyone worse off in the end (Dawes, 1980; Kollock, 1998; Ostrom, 1998). When social dilemmas occur, they are barriers to sharing responsibility for collective action. However, theories to explain how such dilemmas can be overcome diverge significantly because of very different underlying assumptions about the nature of individual decision-making, collective action, and the roles of formal and informal institutions. In particular, they differ in the degree to which they emphasize individual decisions or social interaction, and formal rules and institutions imposed by third parties (e.g. the State, the market) or informal rules and norms devised and agreed upon by the participants themselves.

ii.   Normative standards

The second master frame sees establishing moral and legal standards that are clear and appropriate to risk management contexts as an underlying challenge for sharing responsibility. According to this master frame, existing mainstream moral and legal standards can be unclear, contested or challenged by the uncertain, dynamic and complex conditions commonly encountered in risk management. This creates confusion and conflict over the moral and legal obligations of different parties and therefore about the foundations for guiding decisions about responsibility-sharing. The implied solution to this problem is to establish standards that are more appropriate to the conditions of risk management than existing systems. However, views on what these more appropriate standards would look like vary according to different positions regarding their philosophical foundations.

iii.   Social contract

According to the social contract master frame, sharing responsibility in risk management becomes problematic when the foundations for determining the rights and responsibilities of citizens and the State are contested or unclear. This can happen when the experience of a disaster or crisis challenges the foundations of the existing social contract. This frame therefore highlights the tension that is often inherent in conflicts over responsibility between freedom of individual choice and constraints or obligations that stem from being a part of a society and which are imposed or encouraged by the State. However, a range of political philosophical approaches provide different moral grounds for confronting this tension in risk management.

iv.   Governance

The governance master frame holds that the responsibilities of government and non-government sectors are being fundamentally reconfigured in risk management under the shifting social, political, economic, environmental and technological conditions found in modern democratic societies. This has challenged the legitimacy and effectiveness of existing political institutions and created social conflict. A dominant trend associated with this has been the shifting of responsibility away from government and towards those at-risk—either rhetorically or in practice. This shift is criticized for overemphasising the responsibilities of those at-risk and under-emphasising the responsibilities of those parties able to influence social structures that shape risk. The solution to this problem would therefore involve a fundamental rethink about – and restructuring of - existing institutions and processes of governance.

v.   Social capacity

The social capacity master frame highlights the importance of community participation in risk management, and thus the sharing of responsibility between State risk management agencies and communities at-risk. However, in order that communities are able to share responsibility with the State, they must have social capacity to engage in collective action for risk management in the form of supportive social interactions. The underlying problem for sharing responsibility is therefore how to build up this social capacity. The solution to this problem is not straightforward. It may involve fostering self-reliance and discouraging overreliance on State risk management agencies.

However, it is also likely to involve a key role for the State in establishing conditions in which social capital, adaptive capacity and community resilience can flourish.

vi.   Attribution

The attribution master frame sees the influence of individual perceptions of cause and blame on people's risk management behaviours and attitudes as a potential problem for sharing responsibility. It holds that these perceptions can complicate this sharing and create conflict over which parties are seen to have responsibility. It may also impact the extent to which people feel personally responsible for particular risk management activities. This frame highlights a range of factors that influence these perceptions, such as access to information, sense of personal control, organizational reputations, historical relationships, and judgments of others' intentions and degree of control. Studies that reflect this frame do not focus heavily on how to address the impacts of causal perceptions on risk management. However, some potential options are implied. One option may be for professional risk managers to shape people's perceptions through the use of information, although this approach could be charged with being manipulative. Another more transparent option might be for agencies to focus on relationship-building and empowering people to maintain a strong sense of personal control in the face of risks.

vii.   Sociocultural context

The sociocultural context master frame draws attention to the connection between risk and responsibility, and the way that these concepts are constructed, negotiated and mediated through social and cultural processes. It emphasises the importance of understanding what these concepts mean from the point of view of the people experiencing or conceiving them, and the way that belief systems, norms and values shape this meaning. Therefore, according to this perspective, sociocultural context shapes how people understand and make sense of the way responsibility for risk management is or should be shared. Unlike the attribution master frame, the influence of such factors are not seen as biases that need to be corrected, but as processes that are inherent to how people make sense of their worlds and of living with risk. Therefore, the influence of sociocultural context is not seen as a problem to be fixed. Rather, it is an important and inherent part of the process of sharing responsibility that needs to be understood and engaged with. This view therefore suggests that in order to share responsibility more effectively, an understanding of the social meaning of risk and responsibility in particular contexts, places and times needs to be developed. This would involve giving greater attention to processes of ongoing deliberation and dialogue, and relationship-building. Most importantly, it would involve explicitly recognising that multiple perspectives exist in society at the same time about sharing responsibility, and that these perspectives need to be sought out, understood, and engaged with actively.

viii.   Distribution

The distribution master frame is a critical perspective that exposes structural limitations and barriers to sharing responsibility which stem from inequality and vulnerability. In particular, it emphasises how resources and power are not equally distributed in society and the impact this may have on people's ability to make decisions about and respond to risk. It provides a critical and corrective counter narrative to some perspectives highlighted by the social capacity and governance master frames. While this master frame is more concerned with critiquing than proposing solutions, it does suggest some ways forward for sharing responsibility. In particular, it indicates ways that people, groups and communities may actively seek to work around or reduce the impact of the barriers and limitations they face. More importantly, however, it argues that parties with the capacity to influence structural conditions that create inequality and vulnerability have a responsibility to actively engage in processes to reduce or remove the limitations and barriers these structures may impose.

ix.   Practice

The practice master frame therefore draws attention to the micro-level structures and processes that shape how groups of various kinds work together to manage risk. It is concerned with understanding and developing conditions that support groups to work effectively together to achieve common goals. Key themes in research reflecting this master frame are collaboration,

coordination, cooperation, interoperability and mainstreaming. This master frame is focused on the 'nuts and bolts' level of sharing responsibility amongst parties in particular settings rather than on the more abstract level of 'grand' theorising. The approaches and solutions for sharing responsibility in practice revealed through this master frame are varied and numerous. However, most emphasise processes such as communication, learning, participatory decision-making, flexibility, accountability and transparency. They tend to call for intensive stakeholder engagement and to raise questions about the suitability of rigid, 'command-and-control' style management frameworks.

x.   Complex systems

For the complex systems master frame, dealing with the complex, uncertain and dynamic nature of crises, emergencies and disasters is a fundamental challenge when it comes to sharing responsibility in risk management. Yet despite its explicit focus on complex, wicked problems, this master frame has only periodically been used in a direct way to examine responsibility-sharing for risk management and there is much scope to draw from it more heavily. It highlights the importance of learning-by-doing (e.g. trial and error) and adjusting policies and management approaches progressively in response to new learning. It also emphasises the importance of particular organizational qualities such as role redundancy, independence, responsiveness, and communication flow. In this respect, it shares some common themes with the practice master frame, which similarly questions overly rigid organizational and managerial structures.

Conclusions

None of the master frames described in this report can be considered the inherently 'best' way of understanding the challenges of sharing responsibility in Australian FEM. Rather, as each of the master frames draw attention to potentially salient issues, each of them has merit as a way of approaching this area of research. Together, the ten master frames provide a pluralistic conceptual framework that encompasses multiple ways of understanding the problem and multiple ideas about solving it. They therefore present a guiding framework that will be used to orient subsequent stage of the *Sharing Responsibility* project.

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1 Introduction

A principle of shared responsibility has guided Australian fire and emergency management practice since the late 1990s. At this time there was a shift towards a risk management framework and away from an almost exclusive focus on responding to hazard events (Elsworth, Gilbert, Rhodes, & Goodman, 2009). A focus on risk opens up emergency management to a larger range of concerns than responding to hazards. Risk is influenced by a wide range of social, economic, political and environmental factors that lie beyond the traditional purview of emergency management (Mileti, 1999; Wisner, Blaikie, Cannon, & Davis, 2004). Managing risk therefore needs to involve a wider range of parties that include those who are responsible for managing residual risk, those who are at risk, and those who influence the level and distribution of risks in society (Handmer, 2003, p. 141). Managing risks effectively requires ongoing coordination and collaboration between these parties. The principle of shared responsibility reflects recognition that the success of risk management relies on a range of parties contributing to the various activities that – collectively – can reduce risk, increase safety and foster disaster resilience. The importance of this principle in Australia has recently been reinforced in the National Strategy for Disaster Resilience (COAG, 2011).

Yet putting this principle into practice is fraught with complications. Responsibilities can be overlapping, interdependent, ambiguous and often conflicting. Different views exist in society on what risk management should achieve, where capacity lies, and how responsibility should be divided. The Australian population has also shown heavy reliance on professional agencies, which may lead to low public risk awareness and a lack of ownership of risk reduction activities. Such challenges reveal a 'wicked problem' hidden within the seemingly simple principle of shared responsibility (Australian Public Service Commission, 2007; Head, 2008; Rittel & Webber, 1973).[1] Wicked problems do not have easy, straightforward, win-win solutions. They commonly involve a high degree of uncertainty, conflicts between competing social values, and high stakes. Moving towards a place where responsibility for risk management and community safety is shared more effectively between emergency service agencies and other parties in Australian society presents such a wicked problem.

This report presents key findings from the first stage of a research project that aims to support stakeholders of the Australian fire and emergency management (FEM) sector to make decisions about how to address the 'wicked' problem of sharing responsibility for risk management and community safety. The *Sharing Responsibility* project is a component of the 'Understanding Risk' research program of the Bushfire Cooperative Research Centre (CRC). It falls within the Bushfire CRC's '*Community Expectations (Mainstreaming fire and emergency management across policy sectors)*' research group (see http://www.bushfirecrc.com/category/projectgroup/1-community-expectations).

The earlier stages of the project explore the *idea* of sharing responsibility as a precursor to analysing it in *practice* in following stages (see Figure 1.1 for an overview of the project). Fire and emergency management is by nature an action-oriented industry that is focused on 'getting the job done' under difficult and urgent conditions, with high stakes and in the face of intense public scrutiny. It is no surprise then that most research that aims to support the industry focuses on ways to support, enhance or improve practice. Consequently, it is far less common for industry-engaged research to explore the ideas, concepts, assumptions and values that underpin this practice.

As a result, little attention has been given to unpacking the ideas that underlie the key principle of shared responsibility in Australian fire and emergency management. In earlier policy and strategy documents, the principle was clearly used to mark an intended shift away from the public's over-reliance on professionalised emergency services towards greater active involvement of communities and households in reducing their own (primarily bushfire) risk (COAG, 2004, p. 16-21; Ellis, Kanowski, & Whelan, 2004, p. 39-40). However, more recently the final report of the Victorian
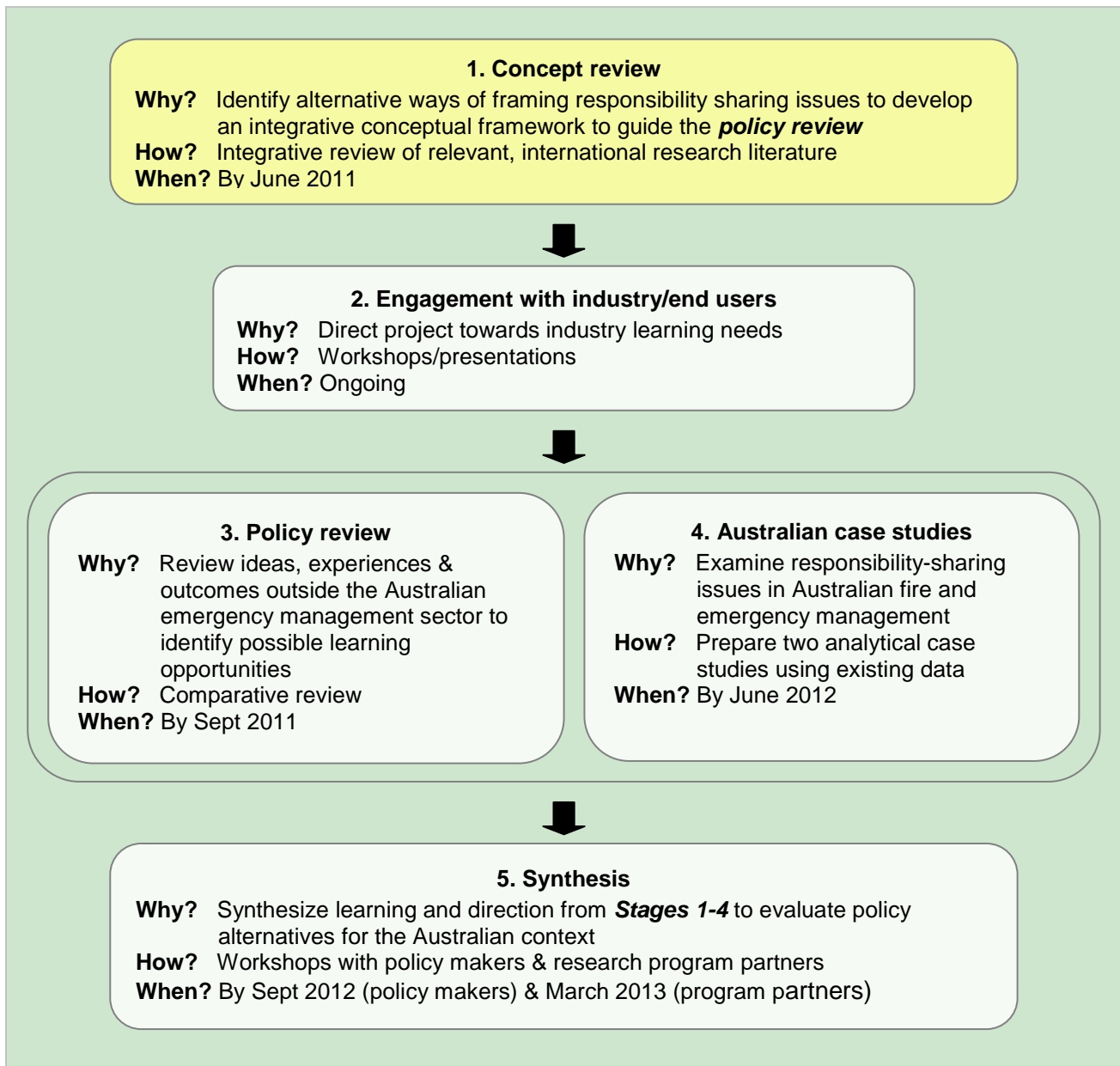
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[1] See also the related concept of "intractable policy controversies" (Schön & Rein, 1994, p. 3-22).

2009 Bushfires Royal Commission framed this principle differently, putting greater emphasis on the need for *all* parties to take on greater responsibility (McLennan & Handmer, In-press). The National Strategy for Disaster Resilience has subsequently broadened the scope of this principle, moving the goal of shared responsibility from increasing community safety to building disaster resilience. This suggests that – on at least some fronts – a process of reinterpreting the principle for today's risk management challenges may be taking place.

Unpacking the ideas underpinning the principle of shared responsibility is therefore a timely research endeavour. While shared responsibility is an important and widely-supported vision in fire and emergency management at a very general level, what it really means and how it might look as a process have not yet been critically and reflectively examined by either researchers or end users. Thus the underlying goal of the *Sharing Responsibility* project is to open a door on this critical and reflective examination.

Stage 1 of the *Sharing Responsibility project* was undertaken in late 2010 and early 2011. It involved a structured review of key ways that underlying challenges for sharing responsibility in risk management are conceptually framed in research literature. The goal of the Stage 1 concept review was to develop a conceptual framework to guide the *Sharing Responsibility* project that incorporated multiple ways of understanding and framing the underlying challenges of responsibility-sharing. It identified ten 'master frames' that have shaped the way research analyses, understands and explains the underlying challenges for sharing responsibility in risk management and what to do about them.

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Figure 1.1: Overview of the Sharing Responsibility project

1. Concept review

Why? Identify alternative ways of framing responsibility sharing issues to develop an integrative conceptual framework to guide the ***policy review***

How? Integrative review of relevant, international research literature

When? By June 2011

2. Engagement with industry/end users

Why? Direct project towards industry learning needs

How? Workshops/presentations

When? Ongoing

3. Policy review

Why? Review ideas, experiences & outcomes outside the Australian emergency management sector to identify possible learning opportunities

How? Comparative review

When? By Sept 2011

4. Australian case studies

Why? Examine responsibility-sharing issues in Australian fire and emergency management

How? Prepare two analytical case studies using existing data

When? By June 2012

5. Synthesis

Why? Synthesize learning and direction from ***Stages 1-4*** to evaluate policy alternatives for the Australian context

How? Workshops with policy makers & research program partners

When? By Sept 2012 (policy makers) & March 2013 (program partners)

Impact of frames

The idea of frames is an important one underpinning this report. Frames are the "underlying structures of belief, perception, and appreciation" (Schön & Rein, 1994, p. 23) that people use to interpret and understand complex issues. Because of the influence of frames, an individual or group will tend to 'see' a complex issue in a particular way, for example by highlighting some aspects more prominently than others. The Victorian 2009 Bushfires Royal Commission's different approach to interpreting the shared responsibility principle compared to the prevailing approach of 'Prepare, Stay and Defend or Leave Early' is one example of different frames in action (McLennan & Handmer, In-press). The impact of frames is particularly strong for wicked problems, given that the nature of the problem – its definition and scope – tends to be contested within society.

Importantly, differences in frames often stem from differences in ideology. As Snow and Benford (2005) explain in the context of social movements, framing involves "the articulation and accenting or amplification of elements of existing beliefs and values, most of which are associated with existing ideologies" (p. 209). The way we frame complex issues therefore says much about what we value – as individuals, professions, disciplines, communities, societies and cultures.

The impact of frames on ideas about risk management matter a great deal. The way decision makers, researchers and other stakeholders frame a risk management problem shapes what solutions they see as most viable, which information they use to make decisions, and which arguments they deem legitimate (Vaughan & Seifert, 1992, p. 121). Moreover, when more than one frame exists in society at the same time, this can exacerbate social conflict over the goals and practice of risk management. This is most evident following risk events when there is a strong tendency for people to seek parties to hold to account for failing to prevent the loss and suffering incurred (Bainbridge & Galloway, 2010; Drabeck & Quarantelli, 1967; Whittaker & Mercer, 2004). This – often very public – blame game exposes differences in the way individuals and groups understand and frame the responsibilities of different parties for managing risk.

Because of these impacts, Handmer and Dovers (2007) stress that emergency management problems are initially best approached using multiple frames (see also Etkin & Stefanovic, 2005). As these authors emphasize, examining ways of framing the wicked problem of sharing responsibility may reveal a wider range of potential solutions. However, they also emphasize how difficult it is to 'see' problems in different ways:

> How we define and frame problems will circumscribe our search for solutions. Many specific ways of framing problems will constrain the search for solutions and may lead to important issues being ignored – for example, by focusing on what we know well or find easy to measure. As a result, it is useful to examine risk using multiple framings. Recognizing and applying different perspectives will highlight where important issues may lie and who stands to lose from different policies. But this may be difficult to do because some of the drivers of problem framing are fundamental to society and it can be difficult to step outside dominant institutions or disciplinary ways of thinking (p. 83).

Addressing wicked problems in practice requires negotiation over competing values and goals (Australian Public Service Commission, 2007:3-4). Drawing on different frames to reflect on these problems is paramount to using 'fresh eyes' to see an old problem in a new way. Head (2008) summarises the contribution of frame theory to thinking about wicked problems in public policy thus:
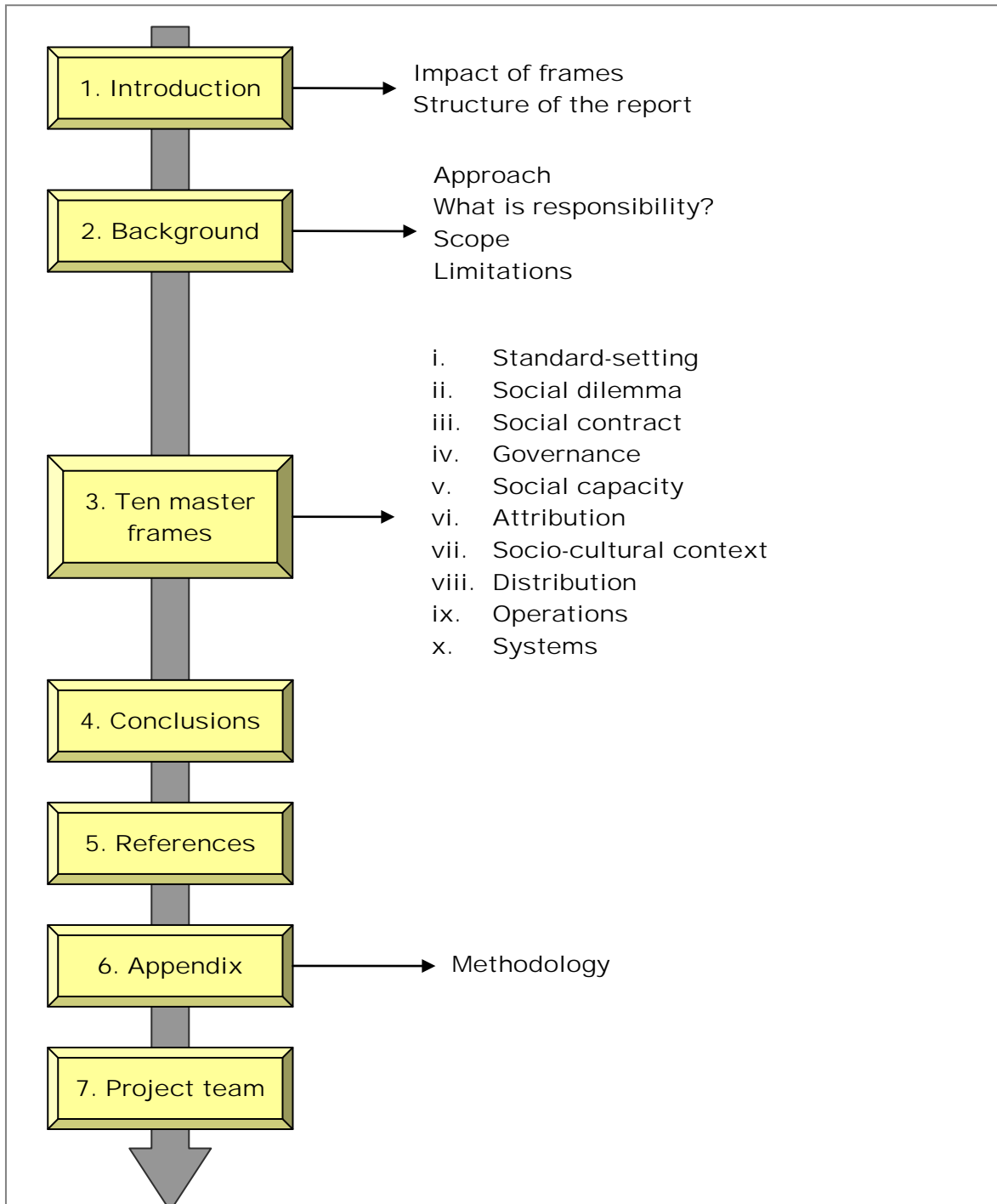
> The big and difficult issues should be seen as based on competing views and value frameworks. Addressing such problems requires deliberation and debate concerning the nature of the issues and exploring alternative ways forward. This deliberative process of solution-seeking, with its recognition of perspectives and values that 'frame' the definition of problems, is quite different from top-down imposition of technical solutions, or from expertise-based solutions arising from the growth in empirical knowledge (p. 102).

This report is based on the premise that reflecting on the impact of frames is important for developing a more nuanced understanding of the meaning of shared responsibility for Australian fire and emergency management. Reflecting on the impact of frames can open doors onto the "deliberation and debate concerning the nature of the issues" and the exploration of "alternative ways forward" that Head (2008) emphasises is needed for addressing "the big and difficult issues".

Structure of the report

This report has seven sections, outlined in Figure 1.2. Following the introduction, the second background section outlines the approach taken to conduct the review, discusses the key concept of responsibility and clarifies the scope and limitations of the review. The third section describes the ten master frames identified in the review while the fourth provides conclusions. The fifth section is a reference list in which references are grouped according to the sections of the report in which they are cited. This is followed by an Appendix that presents the methodology that was used to conduct the review in more detail (section six) and contact information for the project team (section seven).

Figure 1.2: Structure of the report

1. Introduction → Impact of frames
Structure of the report

2. Background → Approach
What is responsibility?
Scope
Limitations

3. Ten master frames →
i.   Standard-setting
ii.   Social dilemma
iii.   Social contract
iv.   Governance
v.   Social capacity
vi.   Attribution
vii.   Socio-cultural context
viii.   Distribution
ix.   Operations
x.   Systems

4. Conclusions

5. References

6. Appendix → Methodology

7. Project team

2 Background

Approach

The Stage 1 concept review was carried out through a type of narrative literature review known as an interpretive, integrative review (Whittemore & Knafl, 2005). This is a form of review in which "the focus of analysis is on variations of approach, angle of vision, or interpretation between the authors of various research products and the critical analysis based on perspectival distinctions rather than methodological flaws" (Thorne, Jensen, Kearney, Noblit, & Sandelowski, 2004, p. 1345). The Stage 1 concept review also differed to the traditional use of narrative reviews, which is as a means to generalise or aggregate the results of individual studies. In contrast to this, the review reported here examined the ways the studies were <u>framed</u> rather than evaluating or summarising the results they produced. In this regard it is similar to sociological approaches known as 'meta-theorizing', which focus on the analysis of theory rather than results (Paterson, Thorne, Canam, & Jillings, 2001, p. 91-108; Ritzer, 1990; Zhao, 1991).

A wide range of theories and approaches have been used to guide research studies that examine responsibility-sharing issues in risk management. These studies show that the challenges for sharing responsibility are not restricted to Australia. Nor are they restricted to the fire and emergency management sector. Studies expose responsibility-sharing issues in fields such as air pollution (Bickerstaff & Walker, 2002), public health (Guttman & Ressler, 2001), workplace safety (Gray, 2009), food safety (Henderson, Coveney, & Ward, 2010), transportation (Sanne, 2008), policing (Hughes & Rowe, 2007), new technologies (Black & Wishart, 2008) and disaster management (Weisshaupt, Jakes, Carroll, & Blatner, 2007). In order to capture the widest range of approaches used to frame responsibility-sharing challenges in research, the review included studies of risk management in a wide range of political systems, and across various sectors such as public health, transport, new technologies and policing.

Because the Stage 1 concept review was broad in scope, a number of choices needed to be made to focus the review process. Examples are choices about how to search for relevant studies, which studies to include or exclude, and how to interpret and integrate the findings from the review. Consequently, the findings in this report were unavoidably influenced by the authors' own ways of framing and conducting the review. This is arguably the case in all forms of narrative literature review (McLennan & Handmer, 2011). A detailed description of the review process is included in Appendix 1 so that readers may evaluate for themselves how the review process may have shaped the findings. Appendix 1 includes information about the studies included, search strategies and the analysis process used.

What is responsibility?

In order to determine the scope of the review, the concept of responsibility needed to be examined. As with the concept of risk (Bradbury, 1989; Cardona, 2003; Fischhoff, Watson, & Hope, 1984; Renn, 2008a; Taylor-Gooby & Zinn, 2006), the idea of responsibility is ambiguous, multifaceted and prone to different interpretations (e.g. Giddens 1999). Because of this, ideas about what responsibility entails change according to the particular perspective adopted by the observer and with the particular context, scenario and conditions in which it figures. In other words, the idea of responsibility itself can be framed in different ways. In the context of sharing responsibility, views about <u>what</u> is being shared inevitably shape positions on <u>how</u> to share it.

In research, no single common understanding of responsibility has developed in social, political, economic or psychological theory. Economist Marc Fleurbaey (1995) points out that definitions of responsibility vary according to different philosophical approaches, making it a "difficult notion" to grasp (p. 684). After asking themselves questions such as "what exactly is responsibility?" social theorists Auhagen and Bierhoff (2001b) responded: "The answer to these questions is: It all depends on the perspective and on the goals pursued. This answer applies to everyday interactions as well as to academic discussions" (Auhagen & Bierhoff, 2001b, p.180-181).

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Moreover, a number of authors lament the lack of conceptual clarity that accompanies analyses of responsibility across research fields that include social theory, philosophy and law (Auhagen & Bierhoff, 2001b; Cane, 2002), governance (Pellizzoni, 2004), and sociology (Strydom, 1999).

'Responsibility' is therefore best thought of as a catch-all term that is used to refer to a collection of interrelated concepts and ideas. However, what it involves in practice will vary from case to case, and, importantly, from frame to frame. A summary of key concepts, notions and ideas associated with the concept of responsibility in the literature reviewed for this report is given below. Each of these concepts is emphasized somewhere within the research literature as being particularly important for understanding the way responsibility is conceived, allocated, shared or shirked. Each is also contested on various fronts by alternative research approaches.

Facets of responsibility

Four different but interrelated facets of responsibility are discernible in discussions across different disciplines, as well as in common usage of the term: obligation, accountability, causality and trustworthiness.

Obligation

Obligation refers to expectations and rules about the duties and roles of different parties in society. It is the *ex ante* or forward-looking aspect of responsibility, because expectations and rules exist prior to and irrespective of the event or conditions that give rise to them (Birnbacher, 2001; Pulcini, 2010). For example, a parent has an obligation to keep their children out of harm's way whether or not the need actually arises.

There are arguably three particularly important types of obligation: moral, legal and social. Judgements of moral obligations stem from normative values of fairness, justice, equality, right/wrong and good/evil (Auhagen & Bierhoff, 2001a; Bickerstaff, Simmons, & Pidgeon, 2008; Pulcini, 2010). Moral obligations are usually other-regarding rather than self-regarding, meaning they are invoked to describe obligations that we have to others in society rather than to ourselves (Birnbacher, 2001). They are also often connected to the notion of protecting rights (Pellizzoni, 2004). For example, by virtue of being human, people have a right to oblige others to refrain from actions that impinge on their life, liberty and so forth.

Meanwhile, legal obligations are those set down in codified legal systems and subject to legal sanction if they are not met (Cane, 2002). As Cane (2002) argues, the law is "just as, if not more, concerned with telling us what our responsibilities are, and with encouraging us to act responsibly, as with holding us accountable and sanctioning us in case we do not fulfil our responsibilities" (p. 30). Notably, there are contrasting views about the degree to which moral and legal obligations overlap, which are discussed further in section 3 part ii, below.

Whereas moral and legal obligations are more or less broadly applied in society, social, or role-related, obligations are more particular. They are the shared expectations in society about particular positions or roles, such as professional and parental roles. People, groups, organisations and agencies may all have particular social obligations. As Shaver and Schutte explain (2001, p. 41), "the demands of a work status or a social role place on the role occupant a set of behavioural expectations that would not apply to others". Social obligations therefore highlight that the basis for many responsibilities is the relationships that a party has with others (Auhagen & Bierhoff, 2001a; Montada, 2001). According to Shaver and Schutte (2001), "entering a relationship with another person is likely to expand the number of behaviours for which one might expect to be held accountable" (p. 38). Social obligations may be laid out formally (e.g. in professional job descriptions) or held informally (e.g. social norms). They may also be legally reinforced, such as when a duty of care arising from a 'special relationship' is found to exist in law (Eburn, 2010, p. 59).

Accountability

Whereas obligation is the *ex ante* facet of responsibility, accountability is *ex post.* It is determined retrospectively after an event or action has taken place (Birnbacher, 2001; Pulcini, 2010). To be held accountable is to be held answerable, liable or to blame for undesired consequences (Pellizzoni, 2004). However, accountability is closely connected to *ex ante* obligations. In general, people and organisations are held to account when they fail to fulfil the obligations that others perceive them to have – whether moral, legal or social in nature. As Witt (2001) points out: "Implying liability, accountability refers to individuals being subject to sanction when acting incongruently with formal guidelines, rules, or laws" (p. 139). Accountability therefore "emphasises the presence of moral or legal rules specifying rights and obligations" (Pellizzoni, 2004, p. 547). It is when parties fall short of abiding by these rules that we deem them to be accountable in a negative sense.

Being held accountable often gives rise to some type of sanction, which can be either formal or informal. Informally, parties may be subject to social sanctions, such as public shaming or exile (Shaver & Schutte, 2001; Witt, 2001). The media has an influential role in amplifying and imparting informal social sanctions towards public figures following a risk event. Formally, sanctions may also be imposed through legal liability. There are various grounds for being held liable that encompass both acts (e.g. the consequences of actions) and omissions (e.g. the failure to carry out a legal obligation). Liability can be criminal and subject to punishment by the State; or civil and requiring payment to the plaintiff for damages. Further, any legal person may be held liable, including people, organizations, companies and governments. In a 'broad brush survey', Cane (2002) lists eight general grounds for legal liability, which are "breach of promises and undertaking, interference with rights, uttering of untruths, breach of trust, doing harm, creating risks of harm, making gains and contemplating crimes" (p. 191). Each of these grounds corresponds to an interest or right that is protected under law.

Causality

Responsibility is often – although not always - associated with judgements about causality (Giddens, 1999; Pellizzoni, 2004; Shaver, 1985; Weiner, 2006). In many contexts, being held accountable requires that consequences can be linked to an identifiable cause (Bickerstaff, et al., 2008). Commonly, the agent that caused an outcome is held accountable for its consequences *ex post.* However, causal responsibility can become muddied when an undesirable outcome is attributable to multiple sources (Shaver & Schutte, 2001).

There are also conditions under which a party can be held responsible for something that they did not directly cause, as in 'vicarious responsibility' (Tadros, 2008). This happens, for example, when a parent is held responsible for something their child has done, such as breaking a window, even though the parent did not cause the break themselves (French, 1992). A party may also be held responsible for something they did not directly bring about because of their particular social obligations. For example, a doctor may be held responsible for a person's medical ailment not because they caused it but because they failed to treat the person in accordance with the moral, legal and social obligations associated with their role. Similar role-related obligations exist for emergency services personnel in the context of natural hazards. Although these hazards have natural origins, when emergency services are found to have failed to act on their obligations at the appropriate time (e.g. by the courts, an inquiry, the media or the public), they may be held accountable for the consequences despite a lack of causality (e.g. Arceneaux & Stein, 2006). This is akin to the legal notion of an 'act of omission'.

Trustworthiness

A different meaning of the term 'responsibility' refers to the qualities of being trustworthy, reliable or dependable (Giddens, 1999). This form of responsibility is a positive quality of a party rather than a judgement (usually negative) about the outcome of an action (Auhagen & Bierhoff, 2001a). Parties are judged to be 'responsible' in this sense when they act in accordance with prevailing rules, expectations and norms regarding their various roles and obligations in society. Conversely,

parties are judged irresponsible when their actions do not align with others' expectations about their various (moral, legal, social) obligations.

Freedom and constraint

A common emphasis in discussions of responsibility is its fundamental relationship with freedom and constraint. Three aspects of this relationship are highlighted in research literature: freedom of choice, constraint in acting, and capacity to act.

Freedom of choice

Freedom of choice or agency is central to the concept of responsibility (Auhagen & Bierhoff, 2001a; Tadros, 2008). In order for a party to be held accountable for an outcome, the outcome must usually be seen to be a consequence of a decision or choice. As Weiner (2006) emphasizes, "inferences of responsibility requires that the causal agent have freedom of choice, or free will" (p. 32). Conversely, if the party that caused an undesirable outcome is not seen to have had any control or choice in the matter then they are less likely to be held responsible. For example, a student who fails an exam is usually held less responsible if the cause is judged to be a lack of aptitude than if it were due to a lack of effort. This is because how much effort the student puts into studying is seen to be more under the student's control than how much 'natural' aptitude they have for studying (Weiner, 2006, p.33).

Constraint in acting

While responsibility is often associated with freedom of choice, it can also paradoxically be associated with constraint in behaviour or action (Auhagen & Bierhoff, 2001a, p. 1). For example, a party is deemed to have acted responsibly when they refrain from doing something that, though it may benefit them personally, would harm someone else. This constraint could be self-imposed (e.g. at the individual, psychological level) or be compelled through rules and norms (e.g. at the societal level) (Auhagen & Bierhoff, 2001a, p. 1). This aspect of responsibility highlights a tension between personal freedom on one hand, and moral, legal and social obligations on the other. For this reason, responsibility is often described as a burden (Auhagen & Bierhoff, 2001a; Bickerstaff & Walker, 2002, p. 2177; Birnbacher, 2001).

Capacity to act

Judgements about responsibility often involve making associated judgements (or assumptions) about a party's capacity to act. To be held accountable for the consequences of an action, a party must usually be judged as having control over a decision (freedom of choice) and having the ability to carry out that decision in practice (capacity). Capacity therefore refers to "control in acting" (Bickerstaff & Walker, 2002, p. 2177) as opposed to 'control in decision-making', which French (1992) calls being "response-able". Even when agents have decisional freedom, they may be constrained in carrying out their decision because of a lack of resources, political power, legal authority, skills, knowledge, influence, or access to alternative courses of action (Birnbacher, 2001). The importance of capacity is highlighted by the fact that parties will often deny responsibility for the consequences of their decisions by arguing they had a lack of capacity to act in one or more of the areas listed above (Montada, 2001). Insufficient capacity may therefore create a problematic gap or tension between a party's *ex ante* obligation and their *ex post* accountability.

Risk and responsibility

A third important aspect of responsibility as an idea is its intricate relationship with risk. These two concepts are connected through the common importance of agency – or free choice - to both. As with responsibility, concepts of risk are often linked with the exercise of human choice through decision-making. As social and political theorist Anthony Giddens (1999) argues, "risks only exist when there are decisions to be taken ... The idea of responsibility also presumes decisions. What brings into play the notion of responsibility is that someone takes a decision having discernable

consequences." Sociologist Niklas Luhmann (1993) also reflects a similar view by making a clear distinction between the ideas of risk and danger (for linguistic analyses of the difference in meaning of these terms, see Boholm, 2011; Ingles, 1991). The basis of this distinction is whether or not the consequences arise as the result of a decision. According to Luhmann (1993) "in the case of risk, losses that may occur in the future are attributed to decisions made" (p. 101). He contrasts this against danger, for which future losses are "attributed to an external factor" (p. 101-2). Consequently, this positions risk as something that people have a choice about and therefore also a responsibility for. However, danger is imposed by outside forces and is uncontrollable. It therefore does not create the same responsibility as risks. In short, risks give rise to responsibilities. The connections between risk and responsibility are analysed in more depth by a number of risk theorists such as Beck (1992), Giddens (1999), Luhmann (1993) and Douglas (1992). These and other analyses – and the master frames they reflect - are outlined in section 3 of this report.

Scope

The Stage 1 concept review incorporated research studies that combined two broad but pivotal themes: risk management (Theme 1); and, responsibility-sharing issues (Theme 2).

For theme 1, 'risk management' was interpreted broadly and included some scenarios that are not explicitly analysed through the lens of 'risk'. It included any activities undertaken to manage scenarios in which there is a possibility for loss of human life, or harm to people's wellbeing, property or other things of value to occur as a result of future events or actions. These scenarios may unfold at a range of scales, from global to local, or they may involve multiple scales. They may also involve any one or more aspects of risk management such as risk identification, risk preparation, hazard mitigation, vulnerability reduction, response to events and recovery.

This theme also included the management of different types of risk. It included systematic or covariate risk where groups of people are exposed to the possibility of loss or harm at the same time. Examples include exposure to wildfire/bushfire, climate change, war, pollution and epidemics. It also included idiosyncratic risks where people are exposed to the possibility of loss or harm individually at different times and to different degrees. Examples include some health issues, personal violence, crime, transport accidents, and most workplace safety incidents. Additionally, it included management of both natural and 'manufactured' or human-made risks. While different types of risk may be managed in very different ways, this review found that the need to share responsibility amongst multiple parties is a common feature of the management of most types of risk.

Theme 2 included all types of responsibility-sharing issues, broadly conceived. Generally speaking, responsibility is shared any time there is collective action. At a basic level, collective action involves a group, whether of individuals or organizations, working together to achieve a mutual goal (Ostrom, 1990; Sandler & Blume, 1992). Collective action can take different forms. Examples include "the development of institutions (e.g., rules for resource management), resource mobilisation (e.g., to hire guards or invest in maintenance activities), coordination of activities (e.g., to avoid crowding), and information sharing (e.g., about techniques or the location of mobile resources)" (Poteete & Ostrom, 2004, p. 224). The notion of collective action is usually invoked when the goals in question are not achievable through individual actions alone but only when a group works together. Most risk management scenarios require a range of parties to work together for a common goal and hence involve some form of collective action.

Theme 2 therefore involved scenarios of collective risk management in which issues of how to share or distribute responsibility amongst the different parties involved were raised or addressed in some way. Responsibility-sharing issues may involve any one or more of the types of responsibility described above. The sets of stakeholders involved in sharing responsibility for risk management may also vary. For example, responsibility may be shared between government and communities or citizens, across portfolios and levels of government, within exposed populations, between public and private sectors, or within society more broadly. Further, responsibility-sharing may have voluntary or imposed, and formal or informal components. Variations in all of these aspects of responsibility-sharing were included in the Stage 1 concept review.

Limitations

Two limitations of the approach taken to conduct the Stage 1 concept review have likely influenced the findings and therefore should be noted here.

First, due to its broad scope the review was not exhaustive. Consequently, it is unlikely that every research theory used to frame responsibility-sharing in collective risk management scenarios were identified. However, the structured approach taken to conduct the review, outlined in the Appendix,

ensured that major differences in framing were identified by including diverse theories from across a range of research disciplines.

Second, the review included only those theories that have been used in published studies of collective risk management scenarios, as defined in the background to this report. However, there may be other theories that have not yet been used in these contexts that could also provide valuable ways of framing responsibility-sharing but were beyond the scope of the review.

3 Ten master frames

The Stage 1 concept review identified ten key ways that challenges for sharing responsibility in risk management are framed in research. Each of the ten frames represents a type of 'master frame' that is reflected by a collection of conceptually-related research theories and approaches.

Researchers, research communities and disciplines frame research problems just as policy makers, policy communities and agencies frame policy problems. In a guide to designing qualitative research, Maxwell (2005, p.33) describes conceptual frameworks as "the system of concepts, assumptions, expectations, beliefs, and theories that supports and informs your research" (p.33). Choices about conceptual frameworks are shaped by epistemological differences in research, disciplinary backgrounds of researchers, the goal of the research, the particular case being studied and its context (Oughton & Bracken, 2009). Different disciplines, research communities and individual researchers draw on different sets of conceptual frameworks to model and explain "what is going on … and why" (Maxwell, 2005, p.33). Because of this, studies of the same substantive topic can present very different pictures of what "what is going on … and why".

Master frames are abstract or generalised, and therefore simplified, frames that inform more complex, diverse and particular ways of seeing complex issues. Frame theory shows that frames are constructed at different levels. For example, in the context of policy-making, Schön and Rein (1994, p. 33) show that frames range from more specific (e.g. particular policy frames) to more generic (e.g. "institutional action" and "meta-cultural" frames). Similarly, Benford and Snow describe 'master frames' in the context of collective action and social movements as 'functioning as a kind of master algorithm that colors and constrains the orientations and activities of other movements" (p. 618). They state that more specific frames are "derivative from master frames" (p. 619). Drawing from these authors, Steinberg (1998, p. 847) refers to master frames as "a relatively stable configuration of ideational elements and symbols, [that] operates as a kind of grammar for the articulation of more specific collective action framing processes". Thus more generic, simplified frames underpin and guide the more numerous, messy and specific frames that are used to construct particular problems in particular places, contexts and times.

In the context of this report, the term 'master frame' is used to refer to common, shared ways of understanding the underlying challenges for sharing responsibility that are reflected by collections of conceptually-related theories in research. The collections of theories that reflect each master frame are far more complex and diverse than is conveyed in the frame descriptions. However, once identified, the ten master frames were easily recognised beneath the detail and diversity of the various theories. Unsurprisingly, the theories and approaches that reflect the same master frame shared common theoretical lineage and philosophical foundations. The ten master frames therefore approximately align along major paradigmatic divides in research.

The ten master frames described here are not discrete and they do not have clear, defined boundaries between them. Rather, they overlap to varying degrees as some research theories reflect elements of more than one of the master frames. Because of this, there is more than one possible way of grouping the research theories. The approach taken in this report was to focus on underlying similarities in the way the problem for sharing responsibility was presented.

In the remainder of this section, the ten master frames are described in turn. The nature of the underlying problem that each 'sees' for sharing responsibility is outlined. Some of the key theories and approaches that reflect each master frame are also described. However, this report does not assess or critique the particular theories associated with each frame in full or in depth. Rather, it only seeks to highlight how key theories that reflect a given frame express the underlying ideas about sharing responsibility, and how they may sometimes propose different solutions despite their shared problem-framing. Similarly, the descriptions below do not systematically describe the content or results of the reviewed studies, although some examples are provided for illustration.

i.   Social dilemma

The first master frame focuses on a fundamental responsibility-sharing challenge that plagues much collective action, known broadly as a social dilemma. The term social dilemma refers to a situation where individuals (or groups, firms, organizations or states) make choices that lead to short term, private gains but which create long term social costs that leave everyone worse off in the end (Dawes, 1980; Kollock, 1998; Ostrom, 1998). When social dilemmas occur, they are barriers to sharing responsibility for collective action. There are many examples of social dilemmas in the field of environmental management in particular, where the individual pursuit of private – primarily economic or lifestyle - gains ultimately creates shared environmental problems such as pollution, depletion of natural resources and also global climate change. In these types of scenario, everyone would be better off cooperating to make decisions collectively that avoid the long-term social costs and leave all parties better off. However, the type of collective action that would achieve the most good for everyone in these situations does not necessarily occur. The reasons why this is, and therefore also what to do about it, is understood and represented very differently by the many and diverse theories that reflect this master frame.

Social dilemmas can occur in a wide range of settings. As Ostrom (1998, p.2) observed, everyone faces a social dilemma of some kind "whenever we consider trusting others to cooperate with us on long-term joint endeavours". Because of this, theories about these dilemmas are found across a wide range of fields and disciplines, including economics, international relations, environmental management, behavioural psychology, human and community development, and public policy. However, social dilemmas were first articulated formally in economics in the context of markets (see Samuelson, 1954), and most theorising draws from economic principles in some way. Social dilemmas are also known by a range of names. Some of the most common are 'collective action problems' (Ostrom, 1990), 'public goods problems' or 'free-riding' (Olson, 1965), the 'tragedy of the commons' (Hardin, 1968), 'moral hazards' (Holmstrom, 1982), 'social traps' (Platt, 1973), the 'tyranny of small decisions' (Kahn, 1966) and 'social loafing' (Karau & Williams, 1993).

Social dilemmas can take different forms, and some of the names listed above actually refer to particular forms. A key distinction is between situations that would require individuals to make *contributions to collective action* in order to provide beneficial public goods to the group (e.g. to build flood levies, pay for a public healthcare system), and those that would require individuals to *collectively constrain private actions* in order to avoid damaging or depleting common pool resources (e.g. constrain activities that pollute, emit greenhouse gases, or drain electricity systems during heat waves) (e.g. Lubell, Vedlitz, Zahran, & Alston, 2006). 'Public goods problems', 'free-riding', 'moral hazards' and 'social loafing' are names used to refer to contribution type dilemmas whereas the 'tragedy of the commons', 'social traps', and the 'tyranny of small decisions' all refer to constraint type dilemmas. 'Collective action problems' is a more general term that refers to all types of social dilemmas, and 'collective action theories' are any theories that seek to explain some form of social dilemma.

The distinction between contribution and constraint type dilemmas mirrors the difference between the ideas of positive and negative externalities, which are foundational concepts in classic economic theory. Externalities exist "whenever the behaviour of a person affects the situation of other persons without the explicit agreement of that person or persons" (Buchanan 1971, p. 7 cited in Dawes, 1980). Externalities are negative when the affect on others is detrimental and they are positive when the affect on others is beneficial. Contribution type dilemmas can arise when there are positive externalities associated with private actions. According to classic economic theory, people have little incentive to help contribute to, for example, building a flood levy to protect their town when they would benefit from it just the same if someone else did it. In this case, the protection provided by the levy is a positive externality that affects those in the town who are protected by it without having contributed to its construction. Constraint type dilemmas arise when there are negative externalities associated with private actions. For example, owners of factories that pollute the air or waterways may create negative externalities in the form of health problems for people living nearby while pursuing private financial benefits.

The dominant tradition within social dilemma theories stems from rational choice theory in economics (Renn, 2008a; Scott, 2000). It includes the microeconomic approaches of decision theory and game theory as well as public and social choice theories that apply economic tools to analyse political and social issues. While approaches in this tradition vary considerably, they share a common, underlying assumption: that collective action can be understood by studying individuals (Scott, 2000). Many of the approaches are normative (Baron, 2008; Over, 2008). They focus on modelling collective decision-making scenarios and devising rules to determine which of a range of alternative possible decisions would lead to the most rational outcome, meaning the outcome that is most able to maximise private benefits for the most number of individuals. This focus on weighing up and calculating the expected gain of different decision options is reflected in common economic concepts such as 'cost-benefit analysis' and 'willingness to pay' (Fried, Winter, & Gilless, 1999).

Social dilemmas pose a significant challenge to some of the fundamental assumptions underpinning the ideas of rational actors and rational choice (Ostrom, 1998; Scott, 2000). Individual actors are considered rational when they act in ways that maximise their private benefits. However, in social dilemma situations, a group of actors making choices that are rational in the short-term actually create suboptimal situations where benefits are <u>not</u> maximised in the long-term. Approaches in this tradition all assume – albeit to varying degrees - that individuals in collective action situations will tend to act rationally in the short-term if left to make their own decisions. They therefore propose that overcoming social dilemmas requires an externally-imposed solution. The most commonly-cited solutions have been privatisation or central government control through regulation (Berkes & Feeny, 1989; Feeny, Berkes, McCay, & Acheson, 1990; Ostrom, 1990, p. 8-13).

In the context of bushfire/wildfire risk management, rational-choice based theories of social dilemmas have been used to frame studies of household risk reduction activities or lack thereof (Busby & Albers, 2010; Crowley, Malik, Amacher, & Haight, 2009; Shafran, 2008). For example, Busby and Albers (2010) claim that 'free-riding' (where individuals do not contribute to beneficial collective action) by neighbours acts as a disincentive to private landholders to share responsibility for reducing wildfire risk through fuel treatment on their properties. The benefit of risk reduction can only be realised if neighbouring landholders all engage in fuel treatment collectively. If only one makes the effort, he/she will bear a cost but will not gain the benefit of reduced risk. Busby and Albers (2010) argue that the only way to overcome this problem is to compel fuel treatment on private properties through regulation.

A second body of work applies rational-choice based approaches to examining a particular type of social dilemma that is significant in the context of risk management: the moral hazard problem. Moral hazards arise because rational actors who are insulated from risk have no incentive to contribute to collective action to reduce the risk. In particular, the provision of insurance (including disaster insurance) can lead to significant moral hazard problems because insured parties have effectively spread or transferred the risk (and hence the responsibility to deal with its outcomes) to the insurance industry (Cutter & Emrich, 2006). A number of risk-related studies look at how moral hazards can be overcome in formal insurance systems through the use of incentives or monitoring arrangements (Garrido & Gómez-Ramos, 2009; McKee, Berrens, Jones, Helton, & Talberth, 2004; Talberth, Berrens, McKee, & Jones, 2006). A number of studies propose that governments and the insurance industry need to work together to develop such arrangements (Barnett, Barrett, & Skees, 2008; Dahlstrom, Skea, & Stahel, 2003; Epple & Lave, 1988). Other studies examine institutional and policy arrangements that might overcome such moral hazard problems related to other types of risk insulation created, for example, through government assistance programs or planning regulations (Deyle & Smith, 2000; McKee, et al., 2004; Talberth, et al., 2006).

Traditional rational approaches to theorising social dilemmas are criticised for having an incomplete or poor understanding of the nature of collective action. Critics argued that they do not account for important social and psychological factors that influence people's decisions with

regards to collective action (Gigerenzer, 2008; Ostrom, 1990, p.21; Ostrom & Ahn, 2009; Scott, 2000). More recent work has therefore extended rational approaches along a range of different lines to respond to these criticisms. One example is work in psychology on the related concepts of 'cognitive heuristics', 'bounded rationality' and 'satisficing' (Gigerenzer, 2008), which examines how and why people may make suboptimal but still sufficiently beneficial decisions rather than making fully rational choices. Another example is work in social and development economics that draws from social network theory to examine how social norms regarding reciprocity and risk-sharing may overcome moral hazards and other challenges in informal insurance arrangements amongst families, friends and communities (Bhattamishra & Barrett, 2010; Fafchamps & Gubert, 2007; Fafchamps & Lund, 2003; Mazzucato, 2009; McPeak, 2006; Shafran, 2008).

A major development occurred in the 1990s when a 'second generation', behavioural approach to theorising social dilemmas emerged. Led by the work of political scientist Elinor Ostrom and colleagues (Berkes & Feeny, 1989; Feeny, et al., 1990; Ostrom, 1990, 2000), this approach focuses on the collective management of common pool resources (e.g. forests, fisheries) by small groups. It draws on empirical case studies to expand on classic rational choice theories (Ostrom, 1998). It challenges the assumptions that individuals are homogenous and selfish, and that collective action can be understood by studying individuals rather than groups. In contrast, it emphasizes the importance of informal institutions that shape social behaviours, historical relationships, norms of reciprocity, learning, and trust that underpin self-governed collective action (Ostrom & Ahn, 2009). It claims that small groups in particular can self-govern without any externally-imposed solution such as privatisation or government regulation. This happens when members of the group are able to communicate with each other to agree on and change their own rules of engagement, and to monitor non-compliance. For example, a behavioural approach to understanding social dilemmas suggests a very different type of solution to the problem of fuel treatment on private properties outlined by Busby and Albers (2010) above. From this perspective, neighbouring landholders could overcome the social dilemma voluntarily by communicating to establish their own informal rules around fuel treatment and developing relationships of trust to support those rules. (for an empirical example in the context of wildfire fuel treatment see Brenkert-Smith, 2010). However, this view of collective action has also been criticized for failing to take sufficient account of the 'external social, political-institutional, and physical environment' in which collective action take place (Agrawal, 2003, p. 250).

A third tradition for examining social dilemmas comes from psychological studies of 'social loafing' (Karau & Williams, 1993). Social loafing is the tendency for individuals to put less effort into collective action than into individual action. Psychological theories of social loafing have not yet been used widely to analyse social dilemmas in risk management. However, they provide insights that are salient in this context. They show that a range of psychological factors can cause social loafing. For example, social loafing may occur when people have low expectations about how much their individual action contributes to a goal, and when the potential for individual efforts to be evaluated is low (Karau & Williams, 1993). When it is difficult to determine each individual's contribution to a collective outcome, people may lose their sense of personal responsibility or get "lost in the crowd" (Karau & Williams, 1993). As West (2000) highlights, this creates a diffusion of responsibility. Potential ways to overcome social loafing include communication that increases people's sense of social responsibility and reinforces perceptions of the importance of a task (Karau & Williams, 1993).

In sum, the social dilemma master frame sees the underlying problem for sharing responsibility in risk management as one of overcoming tensions that can arise between pursuing short-term, private benefits and achieving long-term, collective benefits. However, theories to explain how such dilemmas can be overcome diverge significantly because of very different underlying assumptions about the nature of individual decision-making, collective action, and the roles of formal and informal institutions. In particular, they differ in the degree to which they emphasize individual decisions or social interaction, and formal rules and institutions imposed by third parties (e.g. the State, the market) or informal rules and norms devised and agreed upon by the participants themselves.

ii. Normative standards

The second master frame sees establishing moral and legal standards that are clear and appropriate to risk management contexts as an underlying challenge for sharing responsibility. Moral and legal standards set out many of the fundamental rights and responsibilities in society. Moral, or ethical, standards set out what is deemed right and good, just and fair. Legal standards set out what actions are subject to sanction under the law. Importantly, these standards provide the rules that determine moral and legal obligations - and therefore also the moral blameworthiness and legal liabilities - of different parties in society. If these rules are unclear, contested, or somehow not appropriate or effective, then problems arise over how to judge where moral and legal responsibility should lie and how it should be distributed.

Research theories and approaches that reflect this master frame are found predominantly within moral philosophy, including normative and applied ethics (e.g.Dunfee & Strudler, 2000; Zack, 2006), religious thinking (e.g. Chester, 2005; Ratanakul, 1999; Solihu, 2007) and jurisprudence or legal philosophy (e.g. Cane, 2002).

While there is a relationship between moral and legal standards, the nature of this relationship is not straightforward or universally agreed. Most moral and legal thinkers would agree that "legal and moral responsibility overlap, but will diverge on some occasions" (Williams, 2010). However, there are different schools of thought on the nature of the relationship. Two fundamentally different approaches are presented in jurisprudence, or legal philosophy, for example. Natural law theory states that "what is law must partly depend on moral criteria" while legal positivism contends that "what is law is determined only by the institutional facts internal to a legal system, facts that may or may not meet moral standards" (Sypnowich, 2010). Alternative views also exist. For example, Cane (2002) asserts that:

> … the relationship between law and morality is symbiotic. This is especially so in relation to complex concepts such as responsibility: moral ideas about responsibility are absorbed into the law, and the law influences the way people think about responsibility in the moral domain (p. 15-16).

A key problem found in studies that reflect this master frame is that mainstream foundations for determining moral and legal standards are not always appropriate for determining the obligations of different parties in the context of risk. According to some authors, mainstream thinking conceives responsibility too narrowly to be meaningful for more complex, uncertain, unpredictable and risky situations (Coeckelbergh, 2010; Hansson, 2009; Ladd, 1991). For example, Coeckelbergh (2010) argues that traditional moral frameworks fail to account for the distributed, collective and partially uncontrollable nature of technological action and outcomes. Because of this, he claims that "the traditional conception of responsibility … is no longer adequate" (p. 3), and he calls for a "less harsh" conception of moral responsibilities that takes "lack of control, uncertainty, role conflicts, social dependence, and tragic choice" into account (p. 1, abstract). However, an alternative interpretation of this issue is that the unpredictable and complex nature of technological accidents creates an even greater moral obligation for corporations, governments and other stakeholders. This is reflected in calls to adopt a precautionary principle, or some variation of it, as "a significant way of reintroducing responsibility" (Giddens, 1999: 9) to technological action (see also Myhr & Traavik, 2002; Sandin, 2006). It is also reflected through calls for greater emphasis on corporate social responsibility in risky industries (e.g. Shrivastava, 1995).

Legal standards offered by existing legal systems are also far from straightforward in the context of risk management. Importantly, legal responsibilities may differ fundamentally in the same circumstances under different legal systems. One notable example of this is the different approaches to the issue of a 'duty to rescue' in common and civil law systems. In common law systems such as Australia and the United States, there is no general duty to rescue a stranger (Ashton, 2009; Eburn, 2010, p. 59; Pardun, 1997), although there are often exceptions relating to

specific professional roles such as doctors and ambulance personnel.[2] By contrast, in the civil law systems common in Europe 'Good Samaritan' statutes exist that impose a general duty to rescue or come to the aid of a stranger (Pardun, 1997). Broadly speaking, the common law approach prioritises individual freedom and choice while the civil law approach prioritises humanitarian responsibilities. By contrast, Ashton (2009) provides a different perspective on the duty to rescue, claiming that the more narrow legal duties imposed under common law leaves "a large moral realm in which a citizen may choose to act heroically or simply to be an uninvolved bystander" (p. 71). He argues that "[h]eroic action loses its moral force when it is required by law" (p. 106) and that were an expanded duty to rescue to be introduced in common law systems it would mean "a lesser role for heroes as indicators of society's nature and aspirations" (p. 96).

A number of studies highlight the limited ability of existing legal system to adequately deal with the distribution of legal responsibilities in scenarios that are dynamic, severe and/or complex in nature (e.g. Kunreuther & Michel-Kerjan, 2007; Low et al., 2010; Mian & Bennett, 2009; Perry, 2011; Rothe, Muzzatti, & Mullins, 2006; Wells, Morgan, & Quick, 1999). For example, Low et al. (2010) highlight potential legal liabilities for disaster response authorities in Australia arising from the use of Web 2.0. They stress that emerging liability issues will need to be addressed if this technology is to be used effectively in the future to enhance information-sharing for disaster response (and by extension responsibility-sharing also). Meanwhile, Kunreuther and Michel-Kerjan (2007) highlight potential liability issues for private insurers that provide protection to households and businesses against extreme hazard events. These issues stem from the high uncertainty surrounding the probability and consequences of loss under the influence of climate change.

In summary, according to the normative standards master frame existing mainstream, moral and legal standards can be unclear, contested or challenged by the uncertain, dynamic and complex conditions commonly encountered in risk management. This creates confusion and conflict over the moral and legal obligations of different parties and therefore about the foundations for guiding decisions about responsibility-sharing. The implied solution to this problem is to establish standards that are more appropriate to the conditions of risk management than existing systems. However, views on what these more appropriate standards would look like vary according to different positions regarding their philosophical foundations.

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[2] The Northern Territory is an exception to this in Australia, where a general duty to assist is imposed under the criminal code (Pardun, 1997).

iii. Social contract

The third master frame focuses on the problem of determining an appropriate balance between the rights and responsibilities of citizens and the State. The State, through the authorities and activities of various departments and agencies, has traditionally had a significant role in risk management in most countries. Yet exactly what this role is, and to what degree the State may impose upon citizens' rights in the course of managing risk, are often contentious issues.

One notable example of this type of problem in Australia is the issue of determining people's right to live in extremely fire-prone areas *vis a vis* the responsibilities of governments to reduce people's exposure to bushfire risk. Does the Australian government have the right (and responsibility) to limit where people live in order to prevent them from being exposed to extreme bushfire risk? Or does this constitute undue interference by government with people's rights to take risks and choose where to live? Conversely, what are people's personal responsibilities with regard to reducing their own exposure to risk? According to this third master frame, a clear foundation for determining rights and responsibilities of citizens and the State needs to be established in order to make such decisions. However, a range of different foundations are proposed.

The division of rights and responsibilities between citizens and the State is one of the oldest and most fundamental concerns in political thinking, with roots in moral and political philosophy. Research theories and approaches that reflect this frame are normative, prescribing models of how these rights and responsibilities should be arranged from a moral standpoint.

The notion of a social contract is a fundamental one within this frame. There are different forms of social contract theory developed by key philosophers in the eighteenth century such as John Lock, Thomas Hobbes, Jean-Jacques Rousseau and, more recently, John Rawls. The core idea underpinning each of these social contract theories is that the justification for the State's authority to rule stems from the consent of the people it governs. In particular, people consent to give up some of their individual freedoms so that their lives may be better in an organized society than it would be in an unorganized ungoverned 'state of nature'. One of the key rationales for a social contract is that government can provide a greater degree of security (whether of life or property) than in a state of nature (O'Brien, Hayward, & Berkes, 2009; Pelling & Dill, 2010; Zack, 2006). As O'Brien, Hayward and Berkes (2009) explain, "social contracts typically offer some form of mutual benefit and impose some mutual obligations or constraints. Citizens who are party to these agreements, for example, explicitly or implicitly accept obligations or responsibilities (paying taxes, voting, obeying rules and regulations, etc.) in return for benefits and protection by a state (e.g., maintaining order, fostering citizen wellbeing, and providing for education and health services)" (p. 2).

Problems arise when the mutual benefits and obligations that underpin the social contract are challenged or contested by groups in society. This often happens following disasters and crises – particularly extreme, catastrophic ones (Bruce, 2002; De Waal, 1996; Frankenfeld, 1992; Pelling & Dill, 2010). Experiences with disasters and crises can lead people to question the State's ability or willingness to provide security for its citizens and therefore the distribution of benefits and obligations that underpin the existing social contract. However, while this creates a crisis of legitimacy for governments, it may also present an opportunity to renegotiate values, structures and governance relationships in society (Pelling & Dill, 2010). This issue is particularly pertinent today given that the incidence of extreme events is predicted to rise in many parts of the word under the influence of climate change. To what extent might this create crises of legitimacy for governments and contestation over political and social structures?

Political philosophers propose various foundations for determining the rights and responsibilities of citizens and the State and hence the foundations for a legitimate social contract. All of the different foundations have been drawn on in studies of risk management. For every position put forward, however, a counter-position also exists. For example, liberalism prioritises the liberties and rights of individual citizens and sees minimal leeway for government to curtail these in the pursuit of risk

management (Lanre-Abass Bolatito, 2010). However, communitarianism prioritises citizens' duties and responsibilities to society and accepts a greater degree of government involvement in encouraging or requiring citizens to fulfil these (Delanty, 2002; Hughes, 1996; Lanre-Abass Bolatito, 2010; Ruger, 2006). Meanwhile libertarianism holds that the State should minimize its infringement on individual liberties, emphasising people's rights to take risks (Dunfee & Strudler, 2000; Ruger, 2006), while paternalism argues that States may forcibly restrict individual liberties in order to protect people from harm (New, 1999; Weale, 1978). 'Soft' libertarian paternalism is also presented as something of a middle ground. Particularly influential in the UK and United States under the moniker of 'nudge theory', it suggests that States may seek to <u>influence</u> citizen's actions and choices for their own wellbeing and protection but not forcibly restrict their liberties (Mitchei, 2005; Sunstein & Thaler, 2003; Thaler & Sunstein, 2008).

To sum up, according to the social contract master frame, sharing responsibility in risk management becomes problematic when the foundations for determining the rights and responsibilities of citizens and the State are contested or unclear. This can happen when the experience of a disaster or crisis challenges the foundations of the existing social contract. This frame therefore highlights the tension that is often inherent in conflicts over responsibility between freedom of individual choice and constraints or obligations that stem from being a part of a society and which are imposed or encouraged by the State. However, a range of political philosophical approaches provide different moral grounds for confronting this tension in risk management.

iv. Governance

The fourth master frame also focuses on relationships between government and non-government sectors in society. However, unlike the third, social contract master frame, it is not normative. It does not lay out rules for how responsibilities should be arranged. Rather, it critiques the appropriateness and legitimacy of modern processes of governing, including the process of negotiating responsibilities. According to this master frame, a decline in the legitimacy of government has occurred under the social, political, economic, environmental and technological conditions found in modern, democratic societies. This has led to a fundamental restructuring of roles and responsibilities for governing that has created social conflict in many sectors, including risk management. In particular, this frame holds that responsibility is being inappropriately shifted (either in practice or in political discourse) away from government and towards the individuals and populations that are at-risk.

The concept of 'governance' has gained ground in political research since the 1980s and 1990s. Although many definitions abound, most views agree that "governance refers to the development of governing styles in which boundaries between and within public and private sectors have become blurred" (Stoker, 1998, p. 17). According to one of its key theorists Rosenau (1995), governance "encompasses the activities of governments, but it also includes the many other channels through which "commands" flow in the form of goals framed, directives issued, and policies pursued" (p.14).

The governance concept signifies a qualitative shift in the way government and governing are ordered in modern democratic political systems (Rhodes, 1996). Authors writing from a governance perspective claim that governing styles at many levels have moved away from a reliance on the formal processes of government towards an approach that involves greater interaction between government and non-government stakeholders (Rosenau, 1995). As Pellizoni (2004) emphasizes, this move has occurred in response to "the decline in the legitimacy and effectiveness of policy-making", and it "entails a shift in the dominant approach to responsibility" (p. 542).

In the context of risk, the dominant shift in responsibility is most commonly portrayed as being away from government and towards the individuals and populations that are at-risk. Approaches that reflect this master frame criticise this, arguing that it overemphasises personal responsibilities and under-emphasises the responsibilities of parties, particularly government, which influence social structures that shape risk. This viewpoint is reflected, for example, in Handmer's (2008) critique of assumptions that "flood problems are created by the location decisions of individuals" (e.g. people's choices to live on a flood plain) (p. 531). He argues that "this approach ignores the whole land-use planning and building code system which tells people where they can and cannot build and under what conditions" (p. 531). By contrast, he claims that "the Australian urban, peri-urban and rural township landscape is the result of planning, land development and financiers, not individuals" (p. 532).

 This master frame is reflected strongly in two theoretical approaches that attribute this shift in responsibility to different causes: the 'risk society' approach and governmentality theories.

According to the 'risk society' approach developed by Ulrich Beck (1992; 1999) and elaborated by Anthony Giddens (Ekberg, 2007; Giddens, 1999) this shift in responsibility is due to changes in conceptions of risks in modern societies. The risk society approach emphasizes increases in (perceived or measured) levels of human-made or technological risk and uncertainty in modern societies and a decline of public trust in the ability of science and government to deal with the consequences of this. In effect, new kinds of risks created by modernisation give rise to new forms of responsibility but existing institutional structures are unable to deal with this (Bulkeley, 2001, p. 433). This has created an institutional crisis characterised by tension between society's increasing dependence on scientific and technological experts and declining trust in abstract, expert systems (Giddens, 1994). One outcome of these developments is "organized irresponsibility" (Ulrich Beck,

1999). New types of risk cannot be clearly attributed to the choices and actions of particular agents creating a crisis of accountability. Under these conditions, "responsibility for dangers is systematically offloaded by science and industry onto the lay public as their individual responsibility" (Bickerstaff & Walker, 2002, p. 2177; Petts, 2005). This process is termed "individualisation" (U Beck, 1992).

Governmentality theorists draw on the work of Michel Foucault (O'Malley, 2008; Rose, O'Malley, & Valverde, 2006) to similarly argue that, at least rhetorically, responsibility is being shifted away from the State and towards people who are at-risk (which they call 'responsibilization') (Gilling, 2001; Gray, 2009; Ilcan, 2009; Kemshall & Wood, 2007; Löwenheim, 2007; Mythen & Walklate, 2006). In contrast to the risk society approach, governmentality theories attribute responsibilization to the rise of neoliberal political ideology in modern democratic political systems rather than society's preoccupation with new types of risk (Garland, 1997). Under neoliberal ideology, risk is framed as an outcome of private decisions made freely by rational individuals. Consequently, responsibility for citizen's safety is viewed as resting with the individuals that are at-risk rather than the government agencies, private businesses or scientific organisations that contribute to identifying and managing risks. Governmentality theorists argue that under this influence an increasing number of policies and programs advocate for individuals to take on more personal responsibility for their own safety. However, they claim that this view overstates the degree of control that individuals have over their own risk and safety, and removes responsibility from the parties most able to influence the large-scale forces that also shape risk and safety in modern societies.

Both the risk society and governmentality approaches have been used in studies of risk management to critique processes of individualization or responsibilization across a range of sectors in countries including the UK, Canada, Australia, parts of Europe and the United States (see Ilcan, 2009). Sectors include public health (Beck-Gernsheim, 2000; Guttman & Ressler, 2001), travel safety (Löwenheim, 2007), nanotechnology (Fitzgerald & Rubin, 2010), workplace safety (Gray, 2009) and social policy (Kelly, 2001; Kemshall, 2008). However, critics argue that processes of individualization and responsibilization do not occur across all risk politics or risk management sectors, and hence the applicability of this frame must be assessed on a case by case basis (e.g. Bulkeley, 2001).

In sum, the governance master frame holds that the responsibilities of government and non-government sectors are being fundamentally reconfigured in risk management under the shifting social, political, economic, environmental and technological conditions found in modern democratic societies. This has challenged the legitimacy and effectiveness of existing political institutions and created social conflict. A dominant trend associated with this has been the shifting of responsibility away from government and towards those at-risk—either rhetorically or in practice. This shift is criticized for overemphasising the responsibilities of those at-risk and under-emphasising the responsibilities of those parties able to influence social structures that shape risk. The solution to this problem would therefore involve a fundamental rethink about – and restructuring of - existing institutions and processes of governance.

v. Social capacity

The fifth master frame operates at the smaller scale of communities and social groups. It sees building social capacity amongst those at risk as a fundamental problem for sharing responsibility in risk management. Social groups and communities that have greater capacity to engage in social interaction are generally seen as better able to engage in collective action to reduce their own risk and to recover from risk events. Conversely, if social capacity is low, at-risk populations will be less able to coordinate and communicate to manage their own risk and will therefore tend to rely more heavily on external risk management agencies. This master frame therefore emphasises the need to build social capacity amongst those at-risk in order that communities can share responsibility for risk management with professional agencies, thus reducing people's susceptibility to harm. However, this master frame also draws attention to the fact that greater social capacity does not always translate into positive outcomes for risk management. It highlights the complex relationships between formal risk management institutions and informal social institutions that may either build or undermine social capacity.

Research theories and approaches that reflect this frame have their roots in social capital theories. The concept of social capital refers to the value of social interactions including "relations of trust, reciprocity, and exchange; the evolution of common rules; and the role of networks" (Adger, 2003, p. 389). Social capital is widely regarded to be essential for enabling collective action (Adger, 2003; Ostrom & Ahn, 2009). According to Ostrom and Ahn (2009), it is "an attribute of individuals and of their relationships that enhance their ability to solve collective-action problems" (p. 20). Different types of social capital exist, which need to be mobilised at different times in order to support different types and stages of collective action. For example, Woolcock (2002) and others differentiate between bonding, bridging, and linking social capital. Bonding capital refers to "relations between family members, close friends and neighbours" (p. 23) while bridging capital refers to relations between "more distant associates and colleagues who have somewhat different demographic characteristics" (p. 23). Linking capital entails a "vertical dimension" (p. 23) that constitutes relations between parties with unequal power that include connections to formal political institutions (Szreter, 2002). Each of these types of social capital fulfils particular functions that support collective action in different ways (Ostrom & Ahn, 2009).

In the context of risk, greater levels of social capital are generally seen to enable communities and individuals to fare better in the face of risks and disasters by engaging in effective collective action (e.g. B. Murphy, 2007). The concept of social capital also underpins more recent but increasingly influential concepts in risk and disaster studies such as social and community resilience, and adaptive capacity (Adger, 2003; Berkes, 2007; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008; Pelling & High, 2005). These concepts are associated with different research traditions but all share a focus on building the social capacity, variably conceived, that enables communities to fare better in the face of risks and disasters. However, while social capital is generally positioned as a crucial resource for resilience and adaptive capacity (Norris, et al., 2008; Pelling & High, 2005), greater social capital does not necessarily lead to greater adaptive capacity or community resilience (Minamoto, 2010; Wolf, Adger, Lorenzoni, Abrahamson, & Raine, 2010). For example, Wolf et el (2010) found that bonding social capital amongst the elderly in two UK cities contributed to their vulnerability (or low resilience) to heatwaves. Their social networks served to maintain shared perceptions that heatwaves were not a significant risk and to reinforce norms of independence and reluctance to ask for help. Because of this the authors argue that there is a "less than straightforward relationship between social capital, vulnerability reduction and increasing resilience" (p.51). They also suggest that greater bridging social capital may reduce vulnerability in this case by giving people access to counter-narratives and critiques of the prevailing perceptions.

This "less than straightforward relationship" identified by Wolf et el (2010) reflects a recognized 'dark side' of social capital (Michael Woolcock, 1998). Increases in social capital do not always lead to positive outcomes. As in the above example, social capital may serve to perpetuate behaviours and attitudes that increase risk (see also Patterson, Weil, & Patel, 2010). Alternatively,

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it may enable particular groups to capture the benefits of collective action at the expense of others, permit some group members to free-ride on the communal efforts of others, or maintain socially undesirable groups such as gangs (Carson, 2004; Mladovsky & Mossialos, 2008; Nakagawa & Shaw, 2004; Ostrom & Ahn, 2010). The concept of social capital may also be used by powerful elites to justify "social engineering" (B. Murphy, 2007).

While studies that reflect this master frame do not always focus directly on responsibility-sharing issues, the importance of this sharing is nonetheless heavily implied. A goal that underlies much of this work is to increase the self-reliance of communities and reduce their dependence on external assistance (and hence their vulnerability to negative outcomes in the face of risks). As Nakagawa and Shaw (2004) explain "ultimately the community and/or individual should be responsible for their own safety… To mobilize each member of the community in this collective action (community development), social capital is a crucial need" (p. 12). Along a different line, social capital theorist Coleman (2002) explicitly includes "obligations and expectations and trustworthiness of structures" as important forms of social capital that are effectively held in credit, which a person can "call in if necessary" (p.111).

Given the important role of the State in risk management, interactions between formal disaster management institutions and communities are a key focus within studies reflecting this frame. Some, show how formal institutions can strengthen community capacity to manage risk (e.g. Habtom & Ruys, 2007; Kapucu, 2006; Stewart, Kolluru, & Smith, 2009), and how greater attention to social capital can also strengthen formal disaster responses (Baker & Refsgaard, 2007). Others reveal how formal risk management institutions can undermine community resilience that is built up through informal social interaction (Minamoto, 2010; Patterson, et al., 2010). Yet this is one area that social capital theory is open to criticism. As Mohan and Mohan (2002:195) emphasise, traditional social capital theory "neglects the ways in which social capital can be created (and destroyed) by structural forces and institutions" (see also Fine, 2002; B. Murphy, 2007). One position on this issue asserts that government interventions in the form of welfare or aid may "crowd out" social capital by reducing the incentives people have for engaging in social networks that reduce risk (Heemskerk, Norton, & de Dehn, 2004; Ostrom, 2005). Some authors argue that this encourages increased dependence on State agencies. According to Deci et al (1999:659) for example, "reward contingencies undermine people's taking responsibility for motivating or regulating themselves". This suggests that withdrawal of government support may foster greater social capital and community resilience. However, other authors argue that the State has a critical role in establishing conditions that support the growth of social capital, and in supplementing social capital when disasters exceed coping thresholds (Heemskerk, et al., 2004; B. Murphy, 2007).

In sum, the social capacity master frame highlights the importance of community participation in risk management, and thus the sharing of responsibility between State risk management agencies and communities at-risk. However, in order that communities are able to share responsibility with the State, they must have social capacity to engage in collective action for risk management in the form of supportive social interactions. The underlying problem for sharing responsibility is therefore how to build up this social capacity. The solution to this problem is not straightforward. It may involve fostering self-reliance and discouraging overreliance on State risk management agencies. However, it is also likely to involve a key role for the State in establishing conditions in which social capital, adaptive capacity and community resilience can flourish.

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vi. Attribution

The sixth master frame is primarily concerned with the way individuals perceive and attribute cause and blame for the negative consequences of disasters after they occur. It highlights two sets of important factors that shape people's attributions: people's judgments about the degree of choice and control the involved parties had, and the influence of individual, social, and cultural styles and biases in the way cause and blame are attributed. This frame emphasizes how people's perceptions of a situation may strongly influence their judgements of other parties' responsibilities as well as their own in relation to risk management. These perceptions will in turn influence people's behaviour and attitudes in ways that can complicate responsibility-sharing and intensify social conflict after a risk event.

This master frame is most strongly reflected by attribution theory. Attribution theory is concerned with studying "perceived causation" (Kelley & Michela, 1980, p. 458) or "the judgment of why a particular incident occurred" (Weiner, 1972, p. 203). Most closely associated with social psychology, it essentially aims to understand how people find answers to 'why' questions (Weiner, 1985, 2010), such as 'why did I fail the exam?' or 'why did that car crash happen?' All types of attribution theory, of which there are many, rest on a central principle: that human beings have a strong need to render the world understandable and controllable (Weiner, 2010). This need is particularly compelling when events occur that are unexpected and negative (Weiner, 2006, p.4). This inclination compels people to find ways to understand why the event occurred, and why people involved in the event behaved as they did. This in turn influences how people interpret human behaviour and react to the behaviour (Kelley & Michela, 1980). Attribution theory and risk management therefore have a natural alignment, given that risk events are unexpected and have negative outcomes.

A key focus of attribution theory that concerns responsibility-sharing is examining how people assign causality between internal dispositional characteristics of the people involved (e.g. personal decisions, skills, values) and external forces (e.g. natural hazards, macroeconomic conditions, availability of information). One important factor found to influence these assignments is how observers judge what degree of control people (either others or themselves) had over both the internal and external causes of an event. In the context of wildfire/bushfire, for example, Kumagai et al. (2004) found that property owners who 'lost their sense of control' (p. 122) were more likely to blame others, particularly fire authorities, for the damage incurred to properties compared to those owners who maintained a strong sense of personal control throughout the event.

One example of how attribution theory positions this issue is Weiner's (1995, 2006) extended model of attribution, which emphasizes relationships between perceptions of controllability and judgements of responsibility. Weiner highlights that "inferences of responsibility requires that the causal agent have freedom of choice, or free will" (Weiner, 2006, p.32). According to his model, when actors are perceived to have a high degree of control over events as well as to intend them to happen, they are judged to be more responsible for the outcomes. Conversely, a lack of control and absence of intent attenuates judgements of responsibility. Mitigating factors that serve a higher moral goal may also intervene to absolve actors of blame even when they are deemed to have had control over the event. For example, a student who fails an exam because of a lack of effort would be held less responsible for the failure if the reason they did not study for it was that they had been busy caring for a sick parent (Weiner, 2006, p.33). Consequently, 'full responsibility inferences require internal and controllable causality, intention, and the absence of mitigating circumstances' (Weiner, 2006, p.33).

A second set of factors highlighted in attribution theory as influences on perceptions and judgements of causality and blame is attributional styles and biases. The effect of these styles and biases is to sway or skew what might otherwise be 'rational' attributions (Crittenden, 1983). Attributional styles are "individual and group differences in attributional tendencies" (Crittenden, 1983:441). Studies show that attributional styles may vary in relatively predictable ways in accordance with group or individual traits. For example, in a view that reflects aspects of frame

theory, Weiner (2006:71-9) argues that when it comes to assessments of the causes of poverty "ideology affects causal perceptions, or social reality, in the generally anticipated manner. Conservatives fault the poor for poverty (i.e., blame the victim), whereas liberals place the fault with society".

Attribution studies have also identified a range of perceptual biases in the way people make attributions. Two examples are biases stemming from the 'actor-observer (or self-other) effect' and 'belief in a just world'. The actor-observer effect refers to a tendency for people to attribute other people's behaviour to internal factors but to attribute their own behaviour to external factors (e.g. she failed the exam because she didn't work hard enough but I failed because I was too busy to study and the teacher was not very good). 'Belief in a just world' is a bias that stems from people's desire to believe that 'good things happen to good people' and 'bad things happen to bad people'.

Attribution theory has been critiqued for not adequately addressing the way perceived causation is influenced by social interaction (DeJoy, 1994), organizational obligations (Bickerstaff & Walker, 2002) and other contextual conditions. For this reason it has been labelled by some sociologists as being 'inadequately social' (Crittenden, 1989), with some authors suggested that attribution theories may not be as universal as has been claimed in the past (Manusov & Spitzberg, 2008). For example, exceptions have been found for most identified attributional biases (Graham, 1991; Hogg & Vaughan, 2005, p.93-99).

A final approach that reflects this master frame draws heavily on attribution theories to focus more particularly on assisting crisis managers to protect an organization's reputation following a crisis event. Called the situation crisis communication theory (SCCT) and devised by Coombs (2007a, 2007b), it helps managers to determine how stakeholders and consumers have perceived a crisis and how this will affect people's crisis responses and opinions of the organization. SCCT holds that three key factors shape 'reputational threat' following a crisis: 1) initial crisis responsibility - to what extent it was seen to be caused by the organization; 2) crisis history – whether the organization has had similar crises in the past; 3) relationship history – how well/poorly the organization has treated stakeholders in other contexts in the past. For example, Jeong (2009) drew on SCCT to examine how information about the distinctiveness of an oil spill event in a corporation's history altered observers' judgements of the corporation's internal responsibility for the spill.

In sum, the attribution master frame sees the influence of individual perceptions of cause and blame on people's risk management behaviours and attitudes as a potential problem for sharing responsibility. It holds that these perceptions can complicate this sharing and create conflict over which parties are seen to have responsibility. It may also impact the extent to which people feel personally responsible for particular risk management activities. This frame highlights a range of factors that influence these perceptions, such as access to information, sense of personal control, organizational reputations, historical relationships, and judgments of others' intentions and degree of control. Studies that reflect this frame do not focus heavily on how to address the impacts of causal perceptions on risk management. However, some potential options are implied. One option may be for professional risk managers to shape people's perceptions through the use of information, although this approach could be charged with being manipulative. Another more transparent option might be for agencies to focus on relationship-building and empowering people to maintain a strong sense of personal control in the face of risks.

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vii. Sociocultural context

According to the seventh master frame, acknowledging and responding to the dynamic ways that societies make sense of risk and responsibility in particular sociocultural contexts is a challenge for sharing responsibility in risk management. Whereas the attribution master frame focuses primarily on how risk is conceived at the individual level, the sociocultural context master frame is explicitly concerned with how risk is conceived at the social level. However, both these approaches move the lens of analysis from the perspective of an external, objective observer to a view that is internal and situated, grounded in particular experiences and contexts. The sociocultural context master frame in particular holds that the context in which risk management takes place matters significantly for the way responsibility is understood as an idea and is shared in practice.

This seventh master frame is reflected strongly in sociocultural perspectives of risk. These are a collection of theories and approaches that are concerned with the way that "the causes and consequences of risks are mediated through social processes" (Renn, 1998, p. 55). Although varied, all of these perspectives adopt, to greater or lesser degrees, a social constructivist position. For them, the way that people understand and experience risk is mediated by shared belief systems, norms and ethical frameworks (Lupton, 1999a, p. 29; Taylor-Gooby & Zinn, 2006). Because of its constructed nature, the meaning of risk is not stable, but changes across social and cultural contexts and over time. These studies highlight the roles of relationships, trust, power, agency, efficacy and processes of communication and deliberation in giving meaning to risk and responsibility.

While these perspectives focus centrally on the social construction of risk, the associated social construction of responsibility features strongly in many of them. Given their close connection (see background section) risk and responsibility may be conceived as being co-constructed. One of the theories that most directly considers the co-construction of risk and responsibility is the cultural theory (CT) of Mary Douglas (1992; 1983), and also Dake (1991) and Rayner (1992; 1987). According to CT, people's perceptions of risk vary according to a set of relatively predefined world views. Mary Douglas' work, in particular, highlights the way that different world views shape peoples' views on responsibility and blame. As Lupton (1999b) explains, Douglas "drew attention to the use of the concept of risk as a means in contemporary western societies of maintaining cultural boundaries. She sees risk as acting primarily as a locus of blame, in which 'risk' groups or institutions are singled out as dangerous" (p. 3). Studies have used CT to examine how world views influence peoples' judgements of where responsibility for risk management lies. For example, Pendergraft (1998) drew on CT to explain differences in US citizens' judgements of what is "fair and right" with respect to climate change, while Murphy (2001) used CT to examine how competing policy factions framed tobacco advertising issues in different ways in the United States.

A second approach within this family is the social amplification of risk (SARF) framework (Kasperson & Kasperson, 1996; Kasperson et al., 1988; Renn, Burns, Kasperson, Kasperson, & Slovic, 1992). It examines how social processes mediate peoples' perceptions of risk and responsibility. It sees risk as *both* "objective and a social construction" (Renn, 1998, p. 63). It focuses on risk communication, examining how psychological, social, cultural and political factors work to amplify or attenuate peoples' perceptions of a risk that is being communicated. Studies that draw on SARF have highlighted how people's perceptions of a risk may be attenuated and their acceptance of the risk increased when a sociocultural construction transfers or off-loads responsibility for the risk to others, such as to government authorities or scientists (e.g. Haynes, Barclay, & Pidgeon, 2008). Alternatively, legal and regulatory systems that allow parties to evade responsibility for contributing to an event or outcome can amplify public risk perceptions (Leschine, 2002).

A third set of approaches reflecting this frame adopt a social constructivist position to examine how citizens negotiate personal, social and governmental responsibilities for risk management in relation to changing citizen-state relationships (Bickerstaff, et al., 2008; Bickerstaff & Walker, 2002; Bornat & Bytheway, 2010; Gill, 1994; Halpin & Guilfoyle, 2004; Harrison, Burgess, & Filius, 1996;

Petts, 2005). For example, Bickerstaff et al (2008) found that, in regards to a range of different risks, people's sense of personal responsibility and active engagement with risk issues is negotiated "in relation to perceptions of other responsible agents - most importantly, institutional actors - and of whether those agents are competent and trustworthy and can be expected to fulfil their duty of care" (p.1327). Along a similar line, Freudenberg (1993) examines people's perceptions of government and professional responsibilities using the concept of recreancy. Recreancy refers to the "behaviors of persons and/or of institutions that hold positions of trust, agency, responsibility, or fiduciary or other forms of broadly expected obligations to the collectivity, but that behave in a manner that fails to fulfil the obligations or merit the trust" (p. 916-917).

This third set of approaches share some emphasis with the social contract and governance master frames. However, they also differ qualitatively from both of these. The social contract master frame is normative, prescribing rules rather than examining how rights and responsibilities are constructed in particular contexts. Meanwhile the governance master frame focuses primarily on the changing socio-structural conditions of responsibility relations and only secondarily on the social processes of perceiving and constructing risk and responsibility under these conditions in everyday life that is emphasized by social constructivist perspectives (see Lupton, 1999a, p. 25-7).

Finally, two further examples of approaches that reflect this master frame are studies that examine social discourses of responsibility and blame (Bainbridge & Galloway, 2010; Bickerstaff & Walker, 2002; Kerr, 2003; Lupton, 1993; Ockwell & Rydin, 2006; Whittaker & Mercer, 2004), and those that examine the way these discourses are framed using frame analysis (Feindt & Kleinschmit, 2011; Fitzgerald & Rubin, 2010; Wakefield, McLeod, & Smith, 2003; Wilkinson, Lowe, & Donaldson, 2010). These studies show how multiple discourses and framings exist in society at the same time. This can create power struggles over the meanings of risk, perceptions of blame, and expectations of roles and obligations, some of which impact policy directions.

In sum, the sociocultural context master frame draws attention to the connection between risk and responsibility, and the way that these concepts are constructed, negotiated and mediated through social and cultural processes. It emphasises the importance of understanding what these concepts mean from the point of view of the people experiencing or conceiving them, and the way that belief systems, norms and values shape this meaning. Therefore, according to this perspective, sociocultural context shapes how people understand and make sense of the way responsibility for risk management is or should be shared. Unlike the attribution master frame, the influence of such factors are not seen as biases that need to be corrected, but as processes that are inherent to how people make sense of their worlds and of living with risk. Therefore, the influence of sociocultural context is not seen as a problem to be fixed. Rather, it is an important and inherent part of the process of sharing responsibility that needs to be understood and engaged with. This view therefore suggests that in order to share responsibility more effectively, an understanding of the social meaning of risk and responsibility in particular contexts, places and times needs to be developed. This would involve giving greater attention to processes of ongoing deliberation and dialogue, and relationship-building. Most importantly, it would involve explicitly recognising that multiple perspectives exist in society at the same time about sharing responsibility, and that these perspectives need to be sought out, understood, and engaged with actively.

viii. Distribution

The eighth master frame emphasises how responsibility is to some extent contingent on the way that power and resource access are distributed within a society. It draws attention to the way that inequality in this distribution makes some people more vulnerable than others in the face of risks. It therefore reveals limits to sharing responsibility, showing how inequality and vulnerability may constrain the capacity of some people and social groups to engage in – and hence to share responsibility for - risk management. However, it also highlights how people may actively seek to work around such limits. Moreover, it holds that parties that do have the power and resources to influences structural conditions that create inequality and vulnerability have a moral obligation to do so.

The research theories and approaches that reflect this frame draw on a long tradition of social and cultural critique. Four key examples are distributive justice perspectives, critical studies of marginalization and social exclusion, vulnerability research and - along a different vein - Nicolas Luhmann's distinction between risk and danger.

Distributive justice (also referred to as 'social justice') refers to principles for allocating benefits and burdens within society (Dunfee & Strudler, 2000; Ikeme, 2003; Lamont & Favor, 2008; Zack, 2006). It is therefore primarily concerned with moral obligations arising from inequality. According to Lamont and Favor (2008), principles of distributive justice "can vary in what is subject to distribution (income, wealth, opportunities, jobs, welfare, utility, etc.); in the nature of the subjects of the distribution (natural persons, groups of persons, reference classes, etc.); and on what basis distribution should be made (equality, maximization, according to individual characteristics, according to free transactions, etc.)." Moral theories of distributive justice are invoked to examine how the benefits and burdens of risk are distributed (or should be distributed) in a given scenario (Ash, 2010; Ferretti, 2010; Hermansson, 2010; Johnson, Penning-Rowsell, & Parker, 2007; Mackie, 2010; Parks & Roberts, 2006). For example, Johnson, Penning-Rowsell and Parker (2007) drew on social justice models to examine the fairness of decision-making processes in flood risk management in England.

Critical studies of marginalisation and social exclusion provide a counterargument to the processes of individualization and responsibilization identified by governance theorists Beck, Giddens, Foucault and others (see section 4.5). These studies expose constraints on people's actions that suggest limits to personal responsibility, and warn against unfairly blaming marginalised people for plights over which they may have little control (Powell, 2008; Schmidt, 2009; Stuvøy, 2010). However, some approaches also bring attention to the ways that people may act to work around their constraints (Flint & Luloff, 2005; Hansen, Lopez-Iftikhar, & Alegría, 2002). Critical perspectives also emphasize that these constraints give rise to moral obligation for those in society who have the power to reduce structural conditions underlying marginalization and social exclusion. However, as Tierney (2007) notes, there is not a strong tradition of using critical social theories to examine risk, hazards and disasters, and there is much scope for further critical analysis.

Vulnerability research has emerged relatively recently and the most abundant research has been in the area of global environmental change. It has been influenced by some critical theories as well as risk/hazard analysis (Adger, 2006). Different conceptions of vulnerability exist in research literature, but more critically-oriented research increasingly focuses on vulnerability as "a state that exists within a system before it encounters a hazard event" (Brooks, 2003, p. 3). The concept of vulnerability also has strong connections to those of adaptation and resilience, although the relationships between them are conceived differently amongst various research communities and authors (see for example Brooks, 2003; Gallopín, 2006; Smit & Wandel, 2006). In essence, vulnerability is seen to stem from the absence or erosion of resilience, including a lack of adaptive capacity (Adger, 2006).

Vulnerability research that highlights the state of the system <u>before</u> it is impacted by a hazard brings attention to the structural factors that increase people's susceptibility to harm and loss when a specific hazard occurs. In contrast to critical studies of marginalisation and social exclusion, vulnerability research focuses comparatively more attention on identifying specific causes of vulnerability in order to support actions to reduce it than on critiquing the underlying socio-structural determinants of vulnerability or marginalisation. However, some branches of vulnerability research emphasize social justice issues and the moral responsibility of those with power to influence social structures to reduce people's vulnerability and remove obstacles to resilience and adaptation (Cutter & Emrich, 2006; Donner & Rodríguez, 2008; Dow, Kasperson, & Bohn, 2006; Mertz, Halsnæs, Olesen, & Rasmussen, 2009; Paavola, 2008; Tompkins, Lemos, & Boyd, 2008). For McEntire (2005), "perhaps the most significant reason why scholarship and emergency management policy are currently floundering is because we still fail to understand and accept responsibility for the impact of vulnerability in disasters." Some vulnerability studies examine government agency responsibilities to prepare and protect people who are seen to be particularly vulnerable to harm or loss in collective risk scenarios (Aldrich & Benson, 2008; Eisenman et al., 2009; Wingate, Perry, Campbell, David, & Weist, 2007). Others analyse the impacts of risk shifting and redistribution within communities and society (Collins, 2008; Lebel et al., 2007). This occurs when parties that have access to more power and resources in society undertake actions to reduce their own risk in ways that result in increases in the risk of others that are more vulnerable. Often, this is done without the consent of those who experience increased risk. Again, this has implications for social responsibilities amongst members of society and risk management frameworks.

Luhmann's (1993, 2000) distinction between risk ("attributed to decisions made") and danger ("attributed to an external factor") outlined on page 10 is another approach that reflects this master frame. He emphasizes that the distinction between risks and dangers is largely a social construction. Modern preoccupation with risk means that dangers are increasingly reframed as risks, which carry with them judgements of greater personal responsibility (Luhmann, 2000). Expanding on Luhmann's position, Sapountsaki (2010) argues that risks have the possibility of a beneficial outcome, whereas dangers do not. Hence people may seek to take risks but transfer dangers. He asks "How to halt danger diffusion and what conditions to impose on risk-takers to make the decision of risk-undertaking and danger-transferring harder and socially responsible?" (p. 426)

To summarise, the distribution master frame is a critical perspective that exposes structural limitations and barriers to sharing responsibility which stem from inequality and vulnerability. In particular, it emphasises how resources and power are not equally distributed in society and the impact this may have on people's ability to make decisions about and respond to risk. It provides a critical and corrective counter narrative to some perspectives highlighted by the social capacity and governance master frames. First, it warns against uncritically emphasising the need for communities and individuals to take greater responsibility for their safety and to be more self-reliant (social capacity master frame) without also giving attention to the need to remove structural limitations and barriers that may prevent them from being able to do this. It also lends strong support to the critiques of individualisation and responsibilization by governance theorists (governance master frame) by exposing potential dangers of these trends. While this master frame is more concerned with critiquing than proposing solutions, it does suggest some ways forward for sharing responsibility. In particular, it indicates ways that people, groups and communities may actively seek to work around or reduce the impact of the barriers and limitations they face. More importantly, however, it argues that parties with the capacity to influence structural conditions that create inequality and vulnerability have a responsibility to actively engage in processes to reduce or remove the limitations and barriers these structures may impose.

ix. Practice

The ninth master frame is concerned with how groups of parties can coordinate and collaborate to share responsibility in practice. It highlights the task of devising structures and processes to guide how groups work together as crucial for the way responsibility is shared in risk management. It shares a focus on collective action with the free-riding master frame. However, while the social dilemma master frame focuses on what is seen as an inherent problem underlying collective action, the practice master frame is more positive and enabling in outlook, being concerned with understanding and developing conditions that enable effective group interaction and coordination. Rather than theorizing about fundamental and generalised features of group interaction as social dilemma theories do, theories reflecting the practice master frame are more concerned with particular settings, and therefore are more substantive and contextualised in orientation.

Reflecting its substantive orientation, the theories and approaches that reflect this master frame are a somewhat wide-ranging and disparate group. They therefore approach this issue from a range of different directions. Three illustrative approaches that are prevalent in studies of risk management are: good governance mechanisms (including risk governance), sociological studies of crisis management, and theorising about policy mainstreaming. However, many other approaches also exist, particularly in the fields of organizational, management and public administration research.

Good governance approaches draw on the ideas underpinning governance theories to examine mechanisms for putting 'good governance' into practice (e.g. Aguilar & Montiel, 2011; Lewis & Mioch, 2005; Weiss, 2000). These frameworks are not concerned with analysing changes in the structure of governing as are the theories of the governance master frame but with the policy, regulatory and management arrangements that can support 'good' governance practices and hence the sharing of responsibilities between governmental and non-governmental actors. In general, good governance principles emphasize participatory decision-making, accountability and transparency. According to Lewis (2005) "good governance is a vehicle for authorities, both state and local, private sector and media, together with civil society to participate, contribute, and articulate their interests and priorities, reconcile their differences, and exercise their political rights and civil liberties, as well as their obligations and responsibilities" (p. 50).

These ideas have been picked up in a number of risk-related fields, such as crisis management and public administration. De Marchi (2003) argues that "changes in the conception of how to deal with risk issues" (p. 173) has led to the rise of "risk governance." As Renn (2008b) explains, this "involves the 'translation' of the substance and core principles of governance to the context of risk and risk-related decision-making" (p. 8). The concept of risk governance is used to propose participatory approaches to the management of risks associated predominantly with new technologies (Chilvers, 2007; Kheifets, Swanson, Kandel, & Malloy, 2010; Renn & Roco, 2006). Other studies draw on the broad concept of governance to examine - or make a case for – particular mechanisms for good governance in disaster management (Abel et al., 2011; Ahrens & Rudolph, 2006; Aldunce & León, 2007; Trim, 2004). A different set of studies does not explicitly draw on good governance principles, but nonetheless focuses on examining management approaches that advance practices that are associated with good governance principles like participatory decision-making (Bajek, Matsuda, & Okada, 2008; Chen, Liu, & Chan, 2006).

Sociological studies of crisis management also reflect principles of good governance but focus on processes and people at the micro-level of actor networks rather than on structural and regulatory arrangements (Drabek, 2007). These studies highlight the roles of leadership and networks as well as processes of negotiating, coordinating, collaborating and building consensus, all of which shape responsibility-sharing at small scales. They therefore also have strong conceptual linkages to social capital theories through their mutual concern with social interaction (see the social capacity master frame). One example is a study by Waugh and Streib (2006) that examined the case of Hurricane Katrina to explore "whether command and control systems are appropriate in dealing with catastrophic disasters in which authority is shared, responsibility is dispersed, resources are

scattered, and collaborative processes are essential" (p. 131). While some studies examine collaboration within communities, including the roles of non-government organizations and local governments (e.g. Simo & Bies, 2007), others focus on examining interagency collaboration and interoperability for disaster and crisis management (e.g. Horwath & Morrison, 2011; McGuire & Silvia, 2010; Palm & Ramsell, 2007). These studies show how operational, technical and logistical issues shape the way agencies and agency personnel work together, including the influence of the crisis context, leadership styles, geography, and resource access.

The third approach directly considers the process of expanding responsibility for addressing complex issues across government agencies in multiple policy sectors. This is a key focus of recent theorizing about policy mainstreaming (also referred to as 'joined-up government', 'whole-of-government approach' or 'integrated government'). Policy integration is increasingly studied as an important process for addressing complex responsibility-sharing issues in areas such as environmental management (Jacob & Volkery, 2004; Nilsson, Eklund, & Tyskeng, 2009; Ross & Dovers, 2008), climate change (Ahmad, 2009; Urwin & Jordan, 2008), emergency/disaster management (Jarman & Kouzmin, 1994; Schipper & Pelling, 2006), food security (Barling, Lang, & Caraher, 2002), and public safety (McGhee, 2003). Policy mainstreaming formally widens the responsibility to achieve policy outcomes to a greater number of parties in order to address cross-sectoral issues more effectively (Schipper & Pelling, 2006). In theory and when done well, mainstreaming can improve governance arrangements, reduce conflict, resolve ambiguities in responsibilities, and foster partnerships to improve policy outcomes. Potential downsides of mainstreaming may include diluting the status of the mainstreamed issue (Ross & Dovers, 2008), supplanting alternative (and possibly less difficult) strategies for achieving the same goals (Sainsbury & Bergqvist, 2009), and deteriorating into symbolic rather than effective policy making (Bührs, 2002). There are also considerable barriers to mainstreaming, such as developing strong leadership, cultural resistance in organizations, complex communication requirements, resourcing and a lack of knowledge or models to guide mainstreaming (Ross & Dovers, 2008).

The practice master frame therefore draws attention to the micro-level structures and processes that shape how groups of various kinds work together to manage risk. It is concerned with understanding and developing conditions that support groups to work effectively together to achieve common goals. Key themes in research reflecting this master frame are collaboration, coordination, cooperation, interoperability and mainstreaming. This master frame is focused on the 'nuts and bolts' level of sharing responsibility amongst parties in particular settings rather than on the more abstract level of 'grand' theorising. The approaches and solutions for sharing responsibility in practice revealed through this master frame are varied and numerous. However, most emphasise processes such as communication, learning, participatory decision-making, flexibility, accountability and transparency. They tend to call for intensive stakeholder engagement and to raise questions about the suitability of rigid, 'command-and-control' style management frameworks.

x. Complex systems

The tenth and final master frame highlights the emergent and dynamic nature of sharing responsibility within complex systems that are characterised by a high degree of uncertainty. It recognises that complex problems require complex solutions. It explicitly warns against framing wicked problems too narrowly, emphasising the need to consider the whole risk management system in order to address complex issues effectively. It has similarities with some theories that reflect the normative standards master frame that see existing moral and legal systems as inappropriate for scenarios of high risk and uncertainty. Along this line, the complex systems master frame holds that under conditions of uncertainty, complexity and change, management approaches need to be flexible rather than adhere to fixed, rigid rules.

Two examples of approaches that reflect the complex systems master frame are the study of high risk socio-technical systems and studies that draw directly on complexity theory. In socio-technical systems, "social, organisational, and technical processes interact in a dynamic manner" (Celik & Corbacioglu, 2010, p. 139). Studies of socio-technical systems draw on a range of organizational theories such as theories of 'normal accidents' (Perrow, 1999), 'man-made disasters' (Pidgeon & O'Leary, 2000) and 'high reliability organizations' (LaPorte & Consolini, 1991) to examine interactions between people and technology, particularly in high risk industries. Amongst other things, they draw attention to organizational contributions to system failures and their prevention in contexts such as aviation and nuclear power (see for example Hovden, Albrechtsen, & Herrera, 2010; Lofquist, 2010). These studies also consider other organizational issues related to responsibility-sharing such as coordination to share knowledge and communicate, the impact of blame on organizational learning (see particularly Pidgeon & O'Leary, 2000), and the benefits of redundancy of organizational roles and information sources (e.g. organizational resilience).

Complexity theory "focuses on multiple interactions and context rather than on single cause-effect mechanisms" (Litaker, Tomolo, Liberatore, Stange, & Aron, 2006). According to Celik and Corbacioglu (2010), complexity theory highlights "the emergence, development, and evolution of new structures and patterns" and the "inter-relationships among and interconnectivity of elements within a system and between a system and its environment" (p. 138). For example, they draw on complexity theory to analyse the use of information and communications systems to respond to two earthquakes in Turkey. They show that the responsibilities of multiple agencies change over time to "create an emergent and complex system in response to disasters" and conclude that the "traditional, bureaucratic organisational structure based on linear assumptions is not capable of feeding backwards and forwards necessary information to critical actors" under complex crisis conditions (p. 151). Complexity theory has also underpinned examinations of complex, multi-agency risk management in other complex contexts, including child protection (Stevens & Cox, 2008), healthcare delivery (Litaker, et al., 2006), crisis management (Farazmand, 2007), and risk/hazards management (Amendola, Ermoliev, & Ermolieva, 2005; Assmuth & Hildén, 2008).

For the complex systems master frame, dealing with the complex, uncertain and dynamic nature of crises, emergencies and disasters is a fundamental challenge when it comes to sharing responsibility in risk management. Yet despite its explicit focus on complex, wicked problems, this master frame has only periodically been used in a direct way to examine responsibility-sharing for risk management and there is much scope to draw from it more heavily. It highlights the importance of learning-by-doing (e.g. trial and error) and adjusting policies and management approaches progressively in response to new learning. It also emphasises the importance of particular organizational qualities such as role redundancy, independence, responsiveness, and communication flow. In this respect, it shares some common themes with the practice master frame, which similarly questions overly rigid organizational and managerial structures.

4 Conclusions

The goal of the Stage 1 concept review was to develop a conceptual framework to guide the *Sharing Responsibility* project that incorporated multiple ways of understanding the underlying challenges of responsibility-sharing. To achieve this goal, it used an interpretive, integrative review of research literature to identify master frames that shape the way research analyses, understands and explains responsibility-sharing issues across a range of collective risk management scenarios. Table 4.1 provides a summary of the ten master frames that were identified.

Importantly, none of the master frames described here can be considered the inherently 'best' way of understanding the challenges of sharing responsibility in Australian FEM. Rather, as each of the master frames draw attention to potentially salient issues, each of them has merit as a way of approaching this area of research. As Handmer and Dovers (2007) suggested in the context of emergency management, "how we define and frame problems will circumscribe our search for solutions … As a result, it is useful to examine risk using multiple framings" (p. 83). This view is supported by literature on wicked problems. For example, Rittel and Webber (1973), who first brought the term into common useage, explain why these problems resist being understood and resolved through a single conceptual frame:

> The information needed to *understand* the problem depends upon one's idea for *solving* it. That is to say: in order to *describe* a wicked problem in sufficient detail, one has to develop an exhaustive inventory of all conceivable *solution*s ahead of time (p. 161, emphasis in original).
>
> The formulation of a wicked problem *is* the problem! The process of formulating the problem and of conceiving a solution (or re-solution) are identical, since every specification of the problem is a specification of the direction in which a treatment is considered. (p. 161, emphasis in original)

The ten master frames do not provide an "exhaustive inventory of all conceivable solutions" for the challenges of sharing responsibility in Australian FEM. However, they do provide a pluralistic conceptual framework that encompasses multiple ways of understanding the problem and multiple ideas about solving it. They therefore present a guiding framework that will be used to orient subsequent stage of the *Sharing Responsibility* project. This is not to say that that all of the ten master frames described here are necessarily equally valuable for the project, nor that each will be drawn on by the end of it. However, beginning an analysis with each of these different perspectives in mind can help to avoid the persistent tendency—in both research and practice—to frame wicked problems too narrowly.

Table 4.1: Overview of the ten master frames

Master frame	The underlying challenge	Facets of responsibility emphasized	Theories and approaches reflecting this frame
1. Social dilemma	Overcoming tensions between private, short-term gains and collective, long-term benefits in collective action	Freedom and constraint, relationships	Collective action theories (rational choice-based and behavioural), public goods problems, free-riding, tragedy of the commons, social traps, tyranny of small decisions, social loafing, moral hazards, externalities, social network theory
a. Normative standards	Establishing clear and appropriate moral and legal standards for determining obligations and assessing accountability	Obligation; accountability; relationships	Normative ethics; applied ethics; religious thinking; jurisprudence; corporate social responsibility
b. Social contract	Determining an appropriate balance in the rights and responsibilities of citizens and the State	Obligations, freedom and constraint	Political philosophy, e.g. social contract theory, liberalism, communitarianism, libertarianism, paternalism, 'soft' paternalism/ 'nudge theory'
c. Governance	Forming appropriate and legitimate decision-making processes for negotiating responsibilities	Relationships, trustworthiness	Risk society, governmentality theories, global governance
d. Social capacity	Building social capacity and resilience amongst those at-risk	Capacity, trustworthiness, relationships	Social capital theories, resilience thinking
e. Attribution	Understanding and influencing styles and biases in the way people attribute cause and blame	Accountability, causality	Attribution theory, situation crisis communication theory (SCCT)
f. Sociocultural context	Acknowledging and responding to the ways risk and responsibility are understood and valued in particular sociocultural contexts	Obligations, relationships	Social constructivism, socio-cultural perspectives of risk e.g. cultural theory, social amplification of risk (SARF), Freudenberg's 'recreancy', discourse analysis, frame analysis
g. Distribution	Reducing inequality and vulnerability in the distribution of resources and power to manage risk	Freedom and constraint, capacity	Distributive justice perspectives, critical studies of marginalization and social exclusion, vulnerability research, Luhmann's social theory of risk and danger
h. Practice	Devising structures and processes to work together effectively in practice	Relationships, trustworthiness	Good governance, risk governance, sociological theories of group behaviour, coordination amongst actors in crisis management and public administration, policy mainstreaming
i. Complex systems	Confronting emergence and uncertainty in complex, dynamic risk management systems	Causality, relationships	'Normal accidents', 'manmade disasters', 'high reliability organizations', high risk socio-technical systems, complexity theory

5 References

Introduction

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6 Appendix

Methodology

The methods used to select and search the studies included in the interpretive, integrative review undertaken in Stage 1 are outlined below.

Studies included

The Stage 1 concept review was selective rather than exhaustive: e.g. an illustrative sample of research studies was reviewed rather than every research study that fit within the scope of the review. There were two reasons for this. First, because of the broad scope of the review it was not realistically possible to review all research studies or all theories that fit within its scope. Second, as the aim of the review was to identify master frames rather than to aggregate or interpret research results, it was not necessary to include all of these studies. Rather, a carefully selected sample of studies (also called 'a purposive sample', Patton, 2002, p. 234-5) was sufficient to identify and illustrate the major framing differences in the body of research that was within the scopae of the review.

As is common in integrative reviews (Whittemore & Knafl, 2005), the Stage 1 concept review included experimental and non-experimental research studies, as well as empirical and theoretical studies. No date restrictions were used to limit the scope of the review, however most of the studies reviewed were conducted between 1980 and 2010. This is likely influenced in part by the emergence of easily accessible, online indexing of academic journals in the 1980s. However, the temporal range of the studies was also likely affected by the significant rise in social theorising about risk from the 1970s onwards (Burgess, 2006). Only peer reviewed articles and published books, as well as influential reports referenced by these, were included in the review. For logistical reasons, only English language studies were reviewed. Further, no restrictions were placed on the geographic regions or types of political systems being studied.

The quality of research studies was not evaluated in-depth due to the focus on analysing conceptual frameworks rather than synthesizing research results. Hence the only quality evaluation made was to assess coherence between the theory used on one hand and the methodology of empirical studies or conclusions drawn by theoretical studies on the other. Only a small number of studies were excluded based on this assessment. In addition, a small number were excluded because they did not draw – either overtly or implicitly – on an identifiable conceptual framework. For the most part, these studies had not engaged with existing research literature in depth.

Search strategies

Studies to include in the review were found using keyword searches conducted primarily in citation indexes (searching the titles, abstracts and keywords of journal articles only) and the Libraries Australia catalogue (http://www.nla.gov.au/librariesaustralia/, to locate books). Searches of GoogleScholar were used only to cross-check against these results in case of indexing problems or biases in the indexed databases. Given the broad nature of the review, four large, multidisciplinary citation indexes were used: Scopus, Science Direct, Web of Science and Wiley Online Library. These four indexed databases cover a broad range of research fields and disciplines. They also provide access to full-text articles. Where full-text articles were not available through RMIT subscriptions, they were requested from other libraries via the RMIT document delivery service. Books sourced via the Libraries Australia catalogue were sourced first from RMIT libraries, then other university libraries in Melbourne or via the RMIT document delivery service. Only articles and books for which full-text copies could be obtained in either hard or soft copy were included in the review.

Three different search strategies were used to locate sources. This protected the results from biases resulting from overly narrow or inconsistent search terms and indexing problems in citation indexes (2005). Accordingly, three search strategies were used: exploratory, targeted and ancestry searches (see also Conn et al., 2003).

Exploratory searches combined keywords associated with each of the two key themes of risk management (Theme 1) and responsibility-sharing issues (Theme 2) combined in search strings using Boolean operations of AND and OR. Synonyms were used to avoid biases in returned results from the use of overly narrow search terms (see Table 5.1). As these exploratory searches were broad, they returned large numbers of studies. Hence smaller samples of illustrative studies were subsequently selected using a form of *maximum variation sampling* that "aims at capturing and describing the central themes that cut across a great deal of variation" (Patton, 2002, p. 234-5). In short, this involved selecting a sample of studies from within the results returned from key word searches that represented the most diverse range of research disciplines, substantive fields, and temporal and geographic coverage.

The full-texts of the studies that resulted from these searches were then manually scanned to identify the theories used.

Table 5.1: Broad key words used in exploratory searches

Theme 1 Risk management	Theme 2 Responsibility-sharing
Risk management	Responsibility
Emergency management	Accountability
Threat	(Moral) obligation
Danger	Duty/ Role
Security	Blame
Public safety	Trustworthy
Community safety	Collective action
Hazard	Liability
Crisis management	Attribute/ attribution
Disaster reduction	Distribution
Harm	Risk transfer
Loss	Risk pool
Protect	Share/ing responsibility
Accident	Collective/ mutual responsibility
	Coordination
	Collaboration
	Justice/ Fairness

Targeted searches combined broad keywords associated with Theme 1 with more specific keywords associated in the literature with theories that reflected each master frame (two examples are provided in Table 5.2). The abstracts and texts of these studies were then manually scanned to identify whether or not responsibility-sharing issues were addressed.

Table 5.2: Two examples of specific key words used in targeted searches

Master frame: Social dilemma	Master frame: Attribution
Collective action theory	Attribution theory
Collective action problem	Blame attribution
Free-ride/r/ing	Responsibility attribution
Public goods	Model of attribution
Common property resources	Situation Crisis Communication Theory
Burden-sharing	Locus of control
Tragedy of the commons	Controllability
Key authors: e.g. Ostrom, Olson, Hardin, Sandler	Key authors: e.g. Shaver, Weiner, Coombs

Ancestry searches involved the systematic review of citations listed in the studies reviewed as well as in review articles (Conn, et al., 2003). On their own, ancestry searching can produce biased samples. However, in conjunction with searches of citation indexes and library catalogues they can expand the number of studies found. They are also useful for targeted, purposive searching because they return a higher proportion of relevant studies compared to broader citation index searches. As abstracts and keywords are not available in this type of search, studies were selected by scanning the original article to identify relevant citations.

The results of the three types of searches were compiled into a bibliographic database using Endnote XI (see http://www.endnote.com/enx1info.asp). In total, approximately 618 studies were compiled in the final bibliographic database. However, many more studies than this were manually scanned and rejected after they were found not to fall within the scope of the review.

Analysis

According to Whittemore and Knafl (2005), while methods to address threats to research quality exist for data collection and extraction phases of integrative reviews, they are not yet well-formulated for analysis, synthesis and conclusion-drawing phases. To address this, these authors present a guide to the analysis process that was followed in the Stage 1 concept review.

The first step in the analysis process involved organizing individual studies in the review into initial subgroups. This was done using a constant comparison method (Whittemore & Knafl, 2005, p. 550). Studies were compared one by one to group similar studies together. The key characteristics of each study were listed in a simple attribute table to facilitate comparison (e.g. year of publication, substantive field, geographic region, type of scenario, key conceptual terms used). The initial subgroups used to order the studies were a combination of: 1) category of conceptual framework (when clearly and directly identified, later evolved into the final list of master frames); 2) key conceptual theme (when present); or, 3) academic discipline when 1) and 2) were not easily identifiable (see Table 5.3, below). The studies were organized in the Endnote XI bibliography according to these subgroups.

Table 5.3: List of initial subgroups used to collate primary studies

Master frame	Key conceptual themes	Academic discipline
Attribution theory	Vulnerability	Economics
Social dilemma theories	Formal risk sharing	Sociology
Social capital theories	Informal risk pooling	Psychology
Cultural theory	Integrated/participatory disaster/risk management	Philosophy
Ethical and moral theories	Risk perception	Political science
	Resilience	Public policy analysis
	Governance/ neoliberalism	Human geography/ political ecology
	Equality/ welfare	Legal
	Risk/hazard research	Undetermined

In a second step, each subgroup was reviewed in turn. The text of each study was manually scanned to identify the main theory used and the key responsibility-sharing issues highlighted. Master frames and conceptual themes were identified using a range of conceptual and theoretical cues, including (Paterson, et al., 2001, p. 91-108):
- Clear statement of the theory in the text (e.g. 'Rawl's theory of justice', 'attribution theory').
- References to seminal theoretical works (e.g. *Risk Society* by Ulrich Beck; *The Logic of Collective Action* by Mancur Olson)
- Key terms associated with particular theories used in text (see Table 2 for examples)
- Study report located in a book or journal that draws on particular theoretical foundations (e.g. "Personal and social responsibility for health" in the *Journal of Ethics & International Affairs"*)
- The disciplinary backgrounds of the authors

When the theories used were not clearly identified using these techniques, the study was set aside and re-examined later once the reviewer was more familiar with the range of master frames. At this later stage, a number of studies were allocated to particular master frames based on their general coherence with the associated collection of theories. Responsibility-sharing issues were identified by manually scanning the texts of each study.

The subgroups were progressively re-organized and refined based on similarities and differences identified amongst the studies until the final set of master frames was determined.

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More information and project documents can be found on the Bushfire CRC website:

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