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Stage 3 policy review
Mechanisms for sharing responsibility
A report of the Sharing Responsibility project

October 2011

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Final Report

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Executive Summary

Introduction
Challenges for sharing responsibility to manage risk and community safety are not only experienced in Australia, nor are they restricted to the field of fire and emergency management. Rather, finding ways to share responsibility amongst multiple parties is a challenge faced across a range of sectors that deal with risk and uncertainty. Risk research literature abounds with studies that expose responsibility-sharing issues in fields such as environmental management, public health, workplace safety, food safety, transportation, policing, new technologies and disaster management.

This report presents findings from a review of different types of mechanisms that have been used to influence the way responsibility for risk management is shared amongst different parties across a range of contexts. The review represents the third stage of a five-staged 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 (see Figure 1.1). The *Sharing Responsibility* project is a component of the 'Understanding Risk' research program of the Bushfire Cooperative Research Centre (CRC).

Background
The rationale for the Stage 3 policy review stems from three central positions:

1. That sharing responsibility is an important dilemma faced by the Australian fire and emergency management (FEM) sector;

2. That reflecting on the impact of frames is necessary for taming the 'wicked' problem of sharing responsibility;

3. That stakeholders of Australian FEM can draw valuable lessons from reflecting on the way responsibility is shared in other places and in other sectors.

The first of these positions is widely supported within and also beyond Australian FEM. Regarding the second position, an underlying goal of the Stage 3 policy review, and indeed the *Sharing Responsibility* project as a whole, is to stimulate what Schön and Rein (1996; 1994) call being 'frame-reflective'. Being frame-reflective refers to the people, groups and organisations that are engaged in the policy-making process acknowledging and identifying different perspectives that exist, and purposefully querying the implications of the way they—and other stakeholders—frame problems. The third position recognises that drawing on experiences and ideas from other places and sectors is a powerful way to stimulate frame-reflection. It helps people to see beyond the usual boundaries and discourses in which they operate to 'see' problems in new ways and consider solutions that might otherwise remain hidden.

Key concepts that underpin this report include those of risk, risk management, responsibility, collective action, institutions, governance and mechanisms. An inclusive concept of *risk* is adopted that incorporates multiple components, any one of which may be addressed through different *risk management* approaches. Like risk, the concept of *responsibility* is a complex, multi-faceted one. However, all facets of responsibility derive in some way from the existence of rules, norms and expectations in society that specify the rights and obligations associated with particular roles and relationships.

Essentially, some form of responsibility-sharing occurs whenever there is *collective action*, and *institutions* have a central role in the way responsibility is shared. Importantly, most forms of risk management are multiparty undertakings, and hence involve some form of collective action. Institutions provide the shared rules, norms and expectations—or standards—through which responsibilities for risk management can be attributed, actioned and assessed. The term *mechanism* is used in this report to refer to any process used to establish or alter institutions for responsibility-sharing amongst parties engaged in collective action to manage risks.

Mechanisms for sharing responsibility
Different types of mechanisms for sharing responsibility were identified through a review of relevant research studies. Most of the source research studies were selected from a larger collection of studies collated during Stage 1 of the *Sharing Responsibility* project. In total, 50 cases were reviewed, purposively selected from the larger collection of studies to represent the widest range of mechanisms possible.

Seven general types of mechanisms were identified, all of which have been used or proposed to shape institutions for sharing responsibility in collective risk management. They are: vision statements, 'hard' laws and regulations, 'soft' interventions, contracts and agreements, collective inquiry and decision-making, organisations and associations, and social norms). There is inevitably some overlap among them. For example, the goal of collective decision-making could be to create a voluntary contract or agreement. Alternatively, policies and programs might aim to influence social norms as in the case of persuasive/ informational campaigns that seek to facilitate risk-reducing social norms. Additionally, multiple mechanisms are often actioned together. For example, complex policy packages may involve a combination of legal, regulatory, organisational and program delivery mechanisms.

Discussion
As the seven types of mechanisms aim to influence responsibility-sharing in different ways, they reflect some fundamental differences also in the way the underlying problem is understood. The generalised problem-frame of the first three types of mechanisms (vision statements, 'hard' laws and regulations, and 'soft' interventions) all share a focus on shaping the responsibility-sharing process to adhere to pre-established or prescribed standards. The remaining types of mechanisms (contracts and agreements, collective inquiry and decision-making, organisations and associations, and social norms) also intend to shape the process of responsibility-sharing. However, they are less likely to start with a pre-established idea of which standards parties involved in this process should adhere to. Instead, they are more likely to include a process for determining, agreeing on or negotiating standards amongst the parties involved.

Significant differences were also found in the way the process of sharing responsibility was framed amongst cases that used the same broad type of mechanism. This is a second layer of framing. It reveals that even when the same or similar general problem-frame exists; the process of addressing that problem can still be framed very differently. Four key areas of difference were: the way that the parties exposed to risk are involved (e.g. as targets, goal setters or implementers), the components of risk that are emphasised, the basis of—or grounds for—responsibility, and responses to situational drivers and local contexts.

Due to its broad scope the Stage 3 policy review was not exhaustive. It is not intended to contribute to making specific decisions about responsibility-sharing. Instead, it was designed to contribute to thinking about responsibility-sharing in an explicitly reflective way. Further, this review was not evaluative. It does not make claims about which mechanisms—or combinations of mechanisms—are better than others. This is because claims about the effectiveness of different mechanisms cannot be made without directly considering the influence of contextual conditions and dynamics of a particular place and time.

Conclusion
The significance and relevance of the analysis in this report in the context of Australian FEM stems from the three positions put forward at the beginning of the report. The aim of the Stage 3 policy review was to stimulate new ways of thinking about how to tackle the wicked problem of sharing responsibility in Australian FEM. This report contributes to an ongoing endeavour. In the next stage the *Sharing Responsibility* project will examine responsibility-sharing in the Australian context. Case studies will be analysed by drawing from the frame-reflective thinking reported here.

1 Introduction

The principle of shared responsibility in Australian fire and emergency management recognises that managing risks to keep communities safe cannot be done by state and territory emergency service agencies alone. Risk management also needs inputs from a range of other parties, certainly the communities and households that are at-risk, but also from state government agencies in other sectors, local governments, federal agencies, private industry and the not-for-profit sector. However, finding ways to share responsibility effectively is a difficult and 'wicked problem' (Australian Public Service Commission, 2007). Problems of this type do not have straightforward solutions because they involve contestation over what is at stake and how best to proceed.

Challenges for sharing responsibility to manage risk and community safety are not only experienced in Australia, nor are they restricted to the field of fire and emergency management. Rather, finding ways to share responsibility amongst multiple parties is a challenge faced across a range of sectors that deal with risk and uncertainty. Risk research literature abounds with studies that 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).
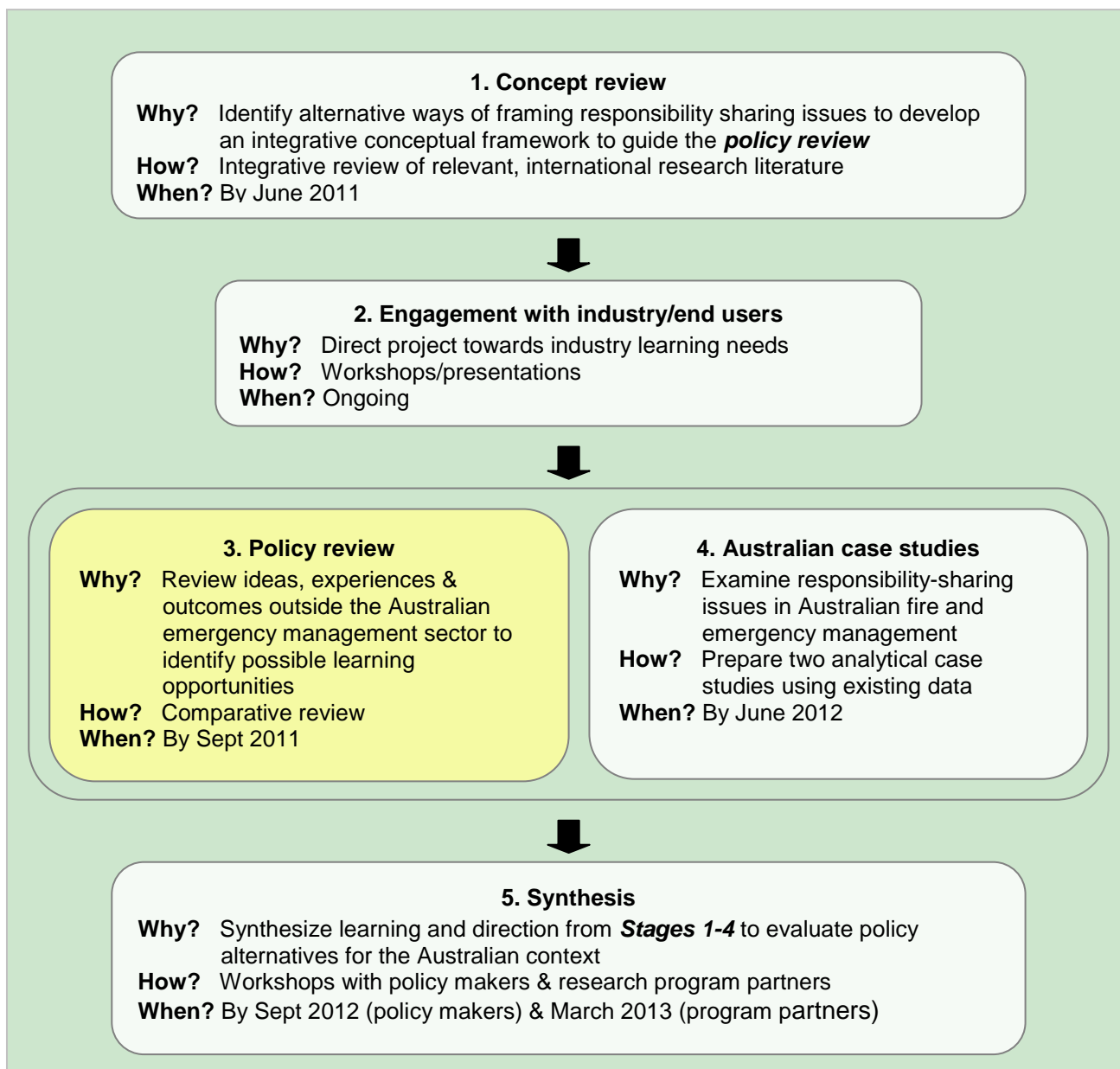
This report presents findings from a review of different types of mechanisms that have been used to influence the way responsibility for risk management is shared amongst different parties across a range of contexts. We use the term 'mechanism' to refer to a wide spectrum of processes and initiatives that have somehow altered the institutions that shape responsibility-sharing. The review represents the third stage of a five-staged 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 (see Figure 1.1). 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.[1] Key personnel on the project are John Handmer (project leader) and Blythe McLennan (researcher) from RMIT University's Centre for Risk and Community Safety, and Mick Ayre (lead end user) from the Northern Territory Fire and Rescue Service.

Stage 1 of the project was undertaken in late 2010 and early 2011 (McLennan & Handmer, 2011b). It identified key ways that underlying challenges for sharing responsibility for risk management are conceptually framed in research. It identified ten 'master frames' that have shaped the way research understands these challenges and what to do about them. Stage 2 is ongoing and involves engagement with industry end users to ensure the project is relevant to industry learning needs and priorities (McLennan & Handmer, 2011a).

Stage 3 was conducted in early to mid 2011 and is the focus of the current report. During initial project planning, it was envisaged that Stage 3 would focus on examining policy mechanisms only. However, as recognition of the importance of a wider range of mechanisms has grown amongst the project team, the scope of Stage 3 has broadened beyond policies to include others type of responsibility-sharing mechanisms. To maintain consistency with initial project planning documentation, this component of the project is referred to throughout the report as the 'Stage 3 policy review' despite its now broader scope.
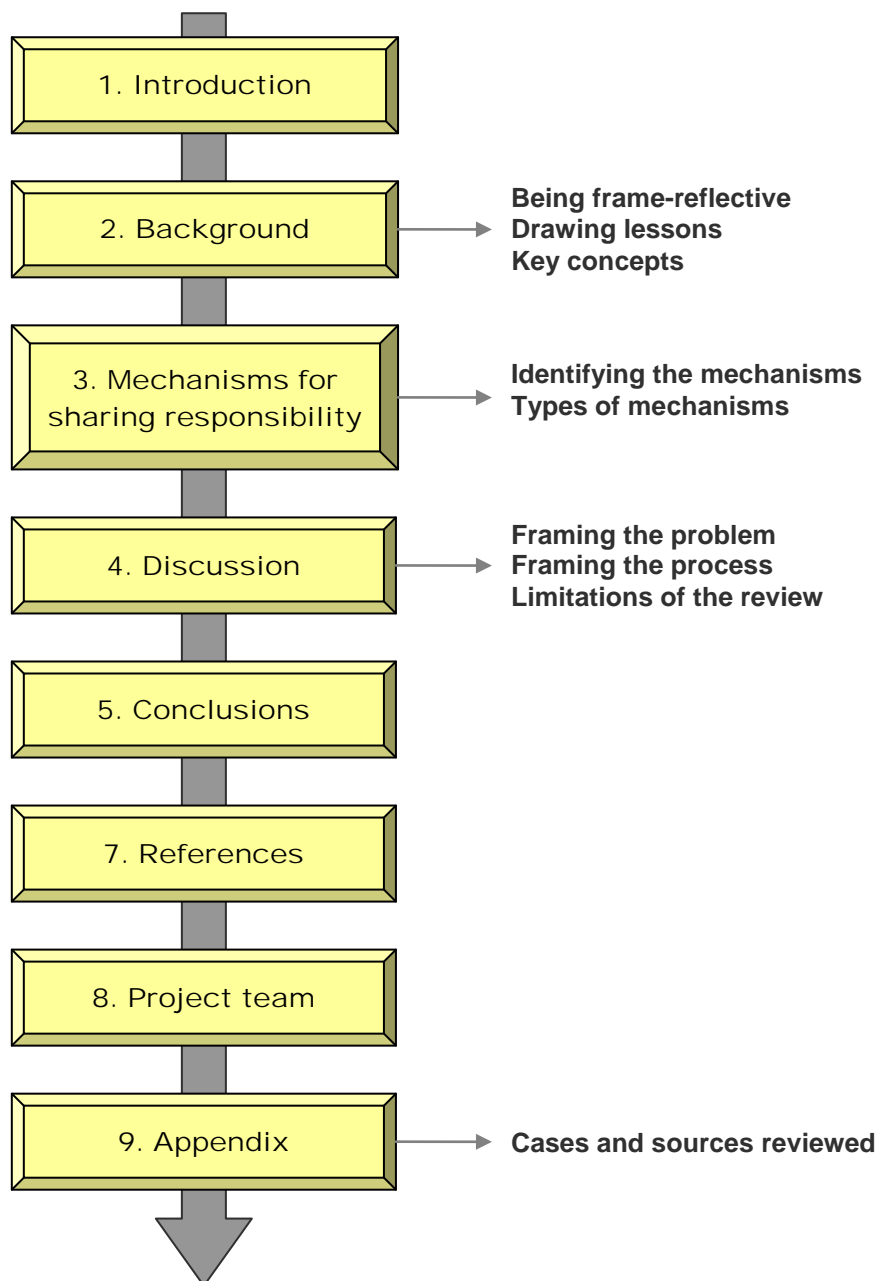
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[1] See http://www.bushfirecrc.com/category/projectgroup/1-community-expectations

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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)

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Structure of the report

This report has eight sections (see Figure 1.2). Following the introduction, section 2 provides background on the rationale underpinning the Stage 3 policy review and defines key concepts. Section 3 describes seven broad types of mechanisms used to share responsibility in the cases reviewed, while section 4 discusses key differences in the way the problem and process of responsibility-sharing were framed, and provides two limitations of the review. Section 5 is the conclusions, followed by reference material (section 6), contact information for the project team (section 7) and an Appendix that lists the cases and sources used in the review (section 8).

Figure 1.2: Structure of the report

Box	Detail
1. Introduction	
2. Background	Being frame-reflective Drawing lessons Key concepts
3. Mechanisms for sharing responsibility	Identifying the mechanisms Types of mechanisms
4. Discussion	Framing the problem Framing the process Limitations of the review
5. Conclusions	
7. References	
8. Project team	
9. Appendix	Cases and sources reviewed

2 Background

The rationale for the Stage 3 policy review stems from three central positions:

4. That sharing responsibility is an important dilemma faced by the Australian fire and emergency management (FEM) sector;

5. That reflecting on the impact of frames is necessary for taming the 'wicked' problem of sharing responsibility;

6. That stakeholders of Australian FEM can draw valuable lessons from reflecting on the way responsibility is shared in other places and in other sectors.

The first of these positions is widely supported within and also beyond Australian FEM. For example, it was reiterated in the Victorian 2009 Bushfires Royal Commission final report (Teague, McLeod, & Pascoe, 2010), the most recent position on bushfires and community safety from the Australasian Fire and Emergency Service Authorities (AFAC) (AFAC, 2010), the National Strategy for Disaster Resilience (COAG, 2011), and the report of the Perth hills February 2011 review (Keelty, 2011). The remaining two positions are elaborated below.

Being frame-reflective

An underlying goal of the Stage 3 policy review, and indeed the *Sharing Responsibility* project as a whole (McLennan & Handmer, 2011b), is to stimulate what Schön and Rein (1996; 1994) call being 'frame-reflective'.

The idea of 'frames' refers to the ways that an individual or group may 'see' an issue in a particular way, for example by highlighting some aspects more prominently than others. Importantly, the way a problem is framed shapes the types of solutions that are envisaged (McLennan & Handmer, 2011b). Wicked problems are prone to being framed in different ways because they are created in part by differences in the values of stakeholder groups, and hence in what aspects of the problem different groups prioritise. Wicked problems are also prone to being framed too narrowly. All stakeholders—policy makers and researchers included—have a tendency to focus on the aspects of a problem they are most familiar with, or have the tools and training to address (Australian Public Service Commission, 2007). Often, these familiar aspects encompass only a small fraction of the conditions and processes that feed wicked problems. This presents a key challenge for addressing wicked problems because the scope of the problem is beyond the expertise and influence of any single organisation or group to manage (Australian Public Service Commission, 2007).

In the context of Australian FEM, it is evident that agencies and communities—as well as individuals, stakeholder groups, policy networks and research communities—can have very different ways of framing responsibilities for community safety (Bainbridge & Galloway, 2010; McLennan & Handmer, In-press; Whittaker & Mercer, 2004). Such differences in frames can exacerbate social conflict over the goals and processes of risk management. In Australia, frame conflicts that centre on responsibilities for managing risk are exposed during the polemic 'blame games' that often follow risk events. Importantly, this public attribution of blame exposes differences in judgements about which parties are responsible for which aspects of risk management. Frame theory shows that resolution of this type of conflict is difficult, if not impossible, unless different frames are identified and their impacts addressed (Handmer & Dovers, 2007, p.83; Head, 2008; Vaughan & Seifert, 1992).

Policy analysts Schön and Rein (1996; 1994) claim that being frame-reflective offers a way to move past the 'intractable policy controversies' that wicked problems create. This idea encapsulates their belief that "human beings are capable of exploring how their own actions may exacerbate contention, contribute to stalemate, and trigger extreme pendulum swings, or, on the

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contrary, how their actions might help to resolve the frame conflicts that underlie stubborn policy disputes" (p. 37-8). Being frame-reflective therefore refers to the people, groups and organisations that are engaged in the policy-making process acknowledging and identifying different perspectives that exist, and purposefully querying the implications of the way they—and other stakeholders—frame problems. According to these authors, the goal of this process is to "contribute to a kind of reframing that resolves the controversies that arise in policy practice" (p. 38). Vaughan and Seifert (1992, p. 131) discuss policy framing in the context of risk. They see the goal of reflecting on frames a little differently. They argue that it is to acknowledge and accommodate differences in existing frames, which is a core part of the process of finding ways to move forward:

> Social conflicts about the management of environmental risks are influenced to a large extent by varying belief and value systems that lead to fundamental differences in the way in which individuals approach or structure policy problems. A successful resolution of many controversies will necessitate strategies that acknowledge, reflect, and accommodate the variability within society in those beliefs and values that influence how risk problems are conceptualized (p. 131).

Whether the goal is reframing or acknowledging and addressing existing frames, consciously reflecting on the impact of frames is an important part of "taming" wicked problems (Gibson, 2003).

Drawing lessons

As Handmer and Dovers (2007) highlight, being frame-reflective is a difficult undertaking. This is 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). Importantly, drawing on experiences and ideas from other places and sectors is a powerful way to stimulate frame-reflection. It helps people to see beyond the usual boundaries and discourses in which they operate to 'see' problems in new ways and consider solutions that might otherwise remain hidden.

The value of 'lesson-drawing' across political and administrative boundaries is widely recognised in comparative public policy analysis:

> In a world in which money and people readily move across national borders, it is unrealistic to insist that nothing can be learned by looking abroad. Searching for lessons from foreign experience is possible because common problems do not produce identical responses. While all countries need to raise taxes, there are many different ways of doing so… Differences in the responses that national governments make to a common problem offer the opportunity to compare the strengths and weaknesses of your own programmes with what other countries are doing (Rose, 2005, p. 4).

Comparative public policy analysis is concerned with lesson-drawing between nation states. However, the benefits of drawing lessons by comparing different approaches to resolving similar problems are just as great across other political and administrative boundaries, including across levels of government, amongst governments at the same level, and even across policy sectors in the same jurisdiction. Of course, policies and other interventions that work in one context may not work in others because of differences in social, economic, political, cultural, institutional or environmental conditions. Hence the aim of lesson-drawing—across whichever type of boundary—is not to uncritically copy something from another place. Rather, it is to stimulate new ideas and ways of thinking about how to address local problems under local conditions. This is done by reflecting on the different experiences and challenges faced in addressing similar problems across a range of different contexts (Rose, 2005, p. 1).

Of course, the sharing of policy experiences and ideas across political boundaries is by no means novel. Policy makers and other stakeholders in the policy process commonly seek to learn from experiences in other places. It is less common, however, for these parties to have the time, resources and research tools to compare and learn from a wide range of diverse experiences.

Reviews of existing policy research are a useful tool for facilitating this broader reflection on differences and options. Policy-oriented research reviews can help both researchers and end users see local problems from different perspectives, and potentially to identify innovative solutions (see McLennan & Handmer, 2011c). Along this line, Lavis et al. (2005) found in a health policy study that:

> Several [policy maker] interviewees suggested that the value of grappling with a systematic review and its local applicability was that it prompted a process of reflection. One argued that; it's really about idea generation and avoiding 'pitfalls' (p.40).

Learning about experiences with and actions for sharing responsibility in a range of other places and sectors can similarly motivate valuable reflection within Australian FEM about how to tackle this wicked problem locally. This process has the potential to reveal a wider range of alternative solutions that may not otherwise be recognised. The aim of the Stage 3 policy review was to identify a wide range of mechanisms that have been used in other contexts to improve the way responsibility for risk management was shared. It is hoped that some of the learning from this review may stimulate new ways of thinking about how to tackle this particular wicked problem in Australian FEM. Later stages of the *Sharing Responsibility* project will explore and reflect on these learning opportunities further in conjunction with policy makers and other stakeholders.

Key concepts

Many of the central concepts and terms used in this report have varied meanings depending on where, how and by whom they are used. Consequently, they are prone to being interpreted and framed in different ways. It is therefore important to clarify the meanings assigned to key terms in the context of this report, while also remaining aware that terms may have different meanings in the studies included in this review.

Risk and risk management

The concept of risk itself has multiple meanings (Renn 2008). For the purpose of this broad review, a definition is needed that incorporates multiple important components of risk. Any one or more of these components may be the focus for the management efforts that give rise to responsibility-sharing issues. Hence we adopt an inclusive concept of risk that is widely used within international research on global environmental change and disaster risk reduction, and which is also reflected strongly in the concept of risk adopted by Emergency Management Australia (EMA, 2004):

> *Risk is a function of interactions between hazard, exposure, and vulnerability, mediated by adaptive capacity.*

In this definition, hazard refers to a physical phenomenon, activity or condition that has the potential to cause harm. [2] Exposure refers to the people, properties or other elements present in an area subject to a hazard. Vulnerability refers to qualities of a community, system or asset that make it susceptible to harm from a hazard, while adaptive capacity is the ability of people and organisations to moderate harm from a hazard by adjusting or responding to it in some way. Risk

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[2] The definitions given here are based on those of the United Nationals Strategy for Disaster Reduction, see (2009)

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may also be conceived as either objective (e.g. probabilistic, technical, measureable) or subjective (e.g. socially-constructed, culturally-defined) in nature (e.g. Jasanoff, 1999).

Risk management approaches may address any one or more of the multiple components of risk. This makes risk management complex and multifaceted and means that goals, processes and responsibilities are susceptible to being framed in different and contested ways (Hampel, 2006; Handmer & Dovers, 2007; Hom, Plaza, & Palmén, 2011; Vaughan & Seifert, 1992).
The multifaceted nature of risk is recognised in Emergency Management Australia's 'comprehensive and integrated', 'all hazards' approach to emergency management (EMA, 2004). An integrated approach includes a wide range of activities that address hazards, exposure, vulnerability and adaptive capacity. Examples of these activities include educating those at risk, providing warnings, designing disaster-resilient settlements, building protective infrastructure, or improving people's access to resources for risk reduction. Risk management may also include activities to respond to risk events, recover after an event, or reduce the level of risk of an exposed party by sharing, spreading or transferring their risk to others (e.g. Treby, Clark, & Priest, 2006). An example of transferring risk is when households take out insurance against storm damage. This transfers a part of the household's economic risk to the insurance sector. Importantly, risk management often requires trade-offs and negotiations to be made between the different components of hazard mitigation, exposure reduction and vulnerability reduction.

Responsibility

The concept of responsibility is similarly a complex, multi-faceted one (Bierhoff, Auhagen, & Bierhoff, 2001). In the context of sharing responsibility, views about <u>what</u> is being shared inevitably shape positions on <u>how</u> to share it.

The report of Stage 1 of the *Sharing Responsibility* project outlined several different facets of responsibility, such as obligation, accountability, trustworthiness and causality (McLennan & Handmer, 2011b). However, all facets of responsibility derive in some way from the existence of rules, norms and expectations in society that specify the rights and obligations associated with particular roles and relationships, including professions, parents, neighbours, and citizens (Auhagen & Bierhoff, 2001). These rules, norms and expectations may be formally codified in laws, regulations, and codes of conduct; or held informally in the social norms and expectations shared by society broadly or by particular social and stakeholder groups. Importantly, these formal and informal rules combine to function as standards against which people and groups assess the appropriateness of their own and others' decisions, actions and associated outcomes. 'Being responsible' means acting in accordance with these standards (Auhagen & Bierhoff, 2001; Giddens, 1999). As being responsible often requires private parties to constrain their activities for the benefit of others, it is often portrayed as a burden. Conversely, notions of being accountable, answerable or liable are invoked when parties' actions are not in accordance with widely-held standards (Pellizzoni, 2004; Witt, 2001). However, standards may conflict, be unclear or be ill-fitting for different conditions. They may also be interpreted, valued or constructed in various ways. Arguably, this is particularly the case under the dynamic and uncertain conditions that characterise most risk management scenarios. This creates confusion that can lead to divergent and conflicting assessments of what obligations different parties have, when they should be held accountable (e.g. to blame) for outcomes, and under what conditions.

Mediating factors also complicate assessments of responsibility. Two particularly important sets of mediating factors are: 1) perceptions or assumptions about whether parties are free to decide to abide by the standards expected or demanded of them, and 2) whether they have the capacity to put their decisions into action (Bickerstaff & Walker, 2002; Luhmann, 1993, p. 101-2; Tadros, 2008; B. Weiner, 2006, p. 32). As social and political theorist Anthony Giddens (1999) argues, "the idea of responsibility … presumes decisions. What brings into play the notion of responsibility is that someone takes a decision having discernable consequences" (p. 8). Usually, if parties are found to have had no choice or control over their decisions or actions, they are not held accountable for the

outcomes. 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). This highlights that judgments about how responsibility should be shared are underpinned by assumptions about the capacities that different parties have to take on certain responsibilities and the degree of choice and control they have. Differences in assessments of responsibility may therefore reflect underlying differences in assumptions about who has freedom of choice and capacity to act in addition to different interpretations of what the standards are for determining responsibility.

Collective action and institutions

The related concepts of collective action and institutions are also central to the approach taken in this review. Broadly speaking, collective action is any action that involves a group, whether of individuals or organisations, working together to achieve a mutual goal (Ostrom, 1990; Sandler & Blume, 1992). The notion of collective action is usually invoked when goals are not achievable through individual actions alone, but rather can only be achieved when a group works together. This is often the case when it comes to the provision of public goods such as security and clean air, and the protection of common pool resources, including forests and water (Hardin, 1968; Olson, 1965; Ostrom, 1990). Importantly, most forms of risk management are multiparty undertakings, and hence involve some form of collective action. It is this <u>collective</u> risk management that is the focus of the Stage 3 policy review.

All collective action is guided by institutions that structure how this action unfolds. Ostrom and Ahn (2010) define institutions as:

> …prescriptions that specify what actions (or outcomes) are required, prohibited or permitted, and the sanctions authorized if the rules are not followed. Institutions are thus the rules of a game that people devise … Rules are the results of human beings' efforts to establish order and increase predictability of social outcomes (p. 28).

Laws, polices and programs are all types of formal institutions that are codified, written down and backed up by some degree of authority. Social norms, cultural values, and workplace cultures are all examples of informal institutions that are not written down but emerge out of the interactions and common understandings amongst groups of people. Many informal institutions are backed up by some kind of social sanction, such as shaming or social exclusion. While informal institutions are most commonly perceived to exist within civil society or industry, they also exist within government agencies (Helmke & Levitsky, 2004). It is also possible to distinguish between 'rules-in-use' and 'rules-in-form'. The first concept refers to rules that actively shape behaviour, while the latter refers to rules that exist on paper, which may provide a vision of how collective action should occur but may not actually be used to shape behaviour in practice (Ostrom, 2005).

Essentially, some form of responsibility-sharing occurs whenever there is collective action, and institutions have a central role in the way responsibility is shared. Institutions provide the shared rules, norms and expectations—or standards—through which responsibilities can be attributed, actioned and assessed (Auhagen & Bierhoff, 2001; Pellizzoni, 2004; Witt, 2001).

Governance

The Stage 3 policy review reflects a governance perspective. Although many definitions of governance 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). Governance therefore "describes structures and processes for collective decision-making involving governmental and non-governmental actors" (Renn, 2008, p.8, emphasis removed from original). Authors writing about governance 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). A governance perspective in research therefore looks beyond the actions and arrangements of government to include interactions and collaborations between government and non-government sectors in society.

Mechanisms

All of the above concepts – risk, responsibility, collective action, institutions, and governance informed the approach taken in the Stage 3 policy review to define and analyse 'mechanisms'. The term 'mechanism' is used in this report to refer to any process used to establish or alter institutions for responsibility-sharing amongst parties engaged in collective action to manage risks. This includes both formal and informal institutions. Examples are making a law, implementing a program, designing a policy, constructing a social norm, resisting or altering a cultural value.

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3 Mechanisms for sharing responsibility

Identifying the mechanisms

In the Stage 3 policy review, different types of mechanisms for sharing responsibility—or more precisely to alter institutions that shape responsibility-sharing in collective risk management—were identified through a review of relevant research studies. The studies either:

1) Examined a particular risk management case where mechanisms to improve the way responsibility was shared had been actioned, or;

2) Proposed a mechanism to improve responsibility-sharing as a result of having analysed problems encountered in a particular case or type of case.

Most of the source research studies were selected from a larger collection of studies collated during Stage 1 of the project. The methodology used during this stage is outlined in more detailed in the Stage 1 final report (McLennan & Handmer, 2011b). Additional studies were also sought out from research journal databases in response to suggestions obtained from AFAC's Community Safety Group. Group members provided suggestions to the researchers about scenarios outside of Australian FEM that might reveal insights about the responsibility-sharing issues faced within their sector.

The Stage 1 concept review identified ten underlying 'master frames' that inform the way research theories understand and explain responsibility-sharing issues in risk management (see Table 3.1). Because frames impact what aspects of a wicked problem are highlighted and what solutions are envisaged, it was important to include studies in the policy review that reflected each of these master frames. This helped to maximise the range of mechanisms that were identified.

Table 3.1: Ten master frames in research for the challenge of sharing responsibility

Master frame	The underlying challenge
1. Social dilemma	Overcoming tensions between private, short-term gains and collective, long-term benefits in collective action
2. Normative standards	Establishing clear and appropriate moral and legal standards for determining obligations and assessing accountability
3. Social contract	Determining an appropriate balance in the rights and responsibilities of citizens and the State
4. Governance	Forming appropriate and legitimate processes for decision-making
5. Social capacity	Building social capacity and resilience amongst those at-risk
6. Attribution	Understanding and influencing styles and biases in the way people attribute cause and blame
7. Sociocultural context	Acknowledging and responding to the ways risk and responsibility are understood and valued in particular sociocultural contexts
8. Distribution	Reducing inequality and vulnerability in the distribution of resources and power to manage risk
9. Practice	Devising structures and processes to work together effectively in practice
10. Complex systems	Confronting emergence and uncertainty in complex, dynamic risk management systems

In total, 50 cases were reviewed, purposively selected from the larger collection of studies to represent the widest range of mechanisms possible. This is a type of sampling known as 'maximum variation' sampling (see Patton, 2002, p. 234-5). A complete list of the cases and some of their characteristics, including the source studies, is provided in the Appendix to this report. Throughout the remainder of the report, a *Case ID* is used to refer to individual cases listed in the Appendix. Table 3.2, below, summarises key similarities and differences amongst the cases.

Table 3.2: Key characteristics of cases reviewed

Characteristic	Similarities and differences
Substantive field	The majority of cases are from the fields of public health and disaster management. Other fields represented include environmental risk, public security, policing, human services, social welfare, workplace safety, new technologies, and transportation.
Status	Two-thirds of the mechanisms had been implemented or actioned. Another third were proposed by the authors of the source study but had not yet been implemented. In one case—the code of social and family responsibly in New Zealand (*Case ID: 1-3-4*)—the mechanism had been proposed by government and subsequently abandoned.
Currency	Of those mechanisms that were implemented, approximately a quarter were implemented before the 1990s (the earliest in the 1800s), a quarter in the 1990s, slightly less than a quarter in the early 2000s and just over a quarter in the late 2000s. Of those that had been proposed only, all except the code of social and family responsibly in New Zealand were proposed recently in the mid to late 2000s.
Political system and geographic location	The majority of the reviewed mechanisms (all but 11) were implemented in, or proposed for, Western democratic political systems. This likely reflects a bias in the published research studies on risk management, which in some sectors tend to focus on cases in developed countries (exceptions are social welfare, public health and disaster management).
Goal	In a broad sense the goals of the mechanisms fell into two categories. In roughly half the cases, changing or clarifying responsibilities was an explicit goal. In the remaining half, the primary goal was to achieve an improvement in safety or security, or to reduce risk. In these cases, changing the way responsibility was shared was a means to an end rather than a direct goal itself. Another distinction is the degree to which the mechanism altered 'rules-in-form' that set written standards and goals, 'rules-in-use' that shaped responsibility-sharing in practice, or the relationships that gave rise to responsibilities.
Parties	The key parties of responsibility-sharing, as they were represented in the source study, also varied across the mechanisms. Almost half primarily involved sharing between the public sector (government) and some element of civil society (e.g. communities, non-for-profit groups, the public). Most of the remaining cases were divided evenly across sharing between the public and private sectors, within civil society, and between all three sectors (public, private and civic). A few, isolated studies involved responsibility-sharing either within the public sector, within the private sector, or between the private sector and civil society.
Administrative scale	Most of the reviewed mechanisms were national in scale, although some of these were administered at state or provincial levels rather than centrally. A smaller number were implemented at a state or provincial scale. Fewer were implemented at the level of a community or organisation. (Note: the review intentionally excluded international scale cases).

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Types of mechanisms

Seven general types of mechanisms were identified, all of which have been used or proposed to shape institutions for sharing responsibility in collective risk management. Table 3.3 lists these and provides a brief description of their intended influence on responsibility-sharing. They are approximately arranged according to the degree of formality of the institutions and processes involved, ranging from most to least formal. Many of the more formal mechanisms are types of policy instruments that are implemented by government (e.g. Vedung, 1998). However, the types of mechanisms included also extend beyond formal approaches to include informal institutions, associations, and reciprocal agreements, which usually do not involve government actors directly.

Table 3.3: Overview of mechanisms for sharing responsibility

Type	Examples	Intended influence
1. *Vision statements*	- National strategies and policies - Statements of principle - Mission statements - Social and ethical codes - Non-binding declarations of rights	Steer and mobilise responsibility-sharing by outlining what it should achieve or look like (not strongly enforced or formally agreed to by the parties involved).
2. *'Hard' laws and regulations*	- Constitutions - Charters - New, amended or extended laws - Traditional regulation - Quasi-regulation (enforced)	Prescribe and compel responsibility-sharing through the use of legal obligations and authorised sanctions/penalties.
3. *'Soft' interventions*	- Financial incentives and disincentives - Direct government delivery of public services - Quasi-regulation (voluntary) - Monitoring and evaluation systems - Informational/persuasive campaigns	Encourage responsibility-sharing by influencing decision-making, behaviour or access to services and resources.
4. *Contracts and agreements*	- Treaties and conventions - Legally-binding voluntary contracts - Public-private partnerships - Hybrid public/private administration - Voluntary non-binding agreements - Agreed declarations of intent - Social relationships of reciprocity	Establish relationships for responsibility-sharing and clarify what is expected of the parties involved (may be binding and subject to penalty or non-binding and without penalty).
5. *Collective inquiry & decision-making*	- Votes - Formal public inquiries - binding - Formal public inquiries – non-binding - Public consultation - Deliberative/collaborative decision-making - Participatory disaster/risk management	Collectively query and/or decide where responsibility lies and/or how to share it.
6. *Organisations and associations*	- New department, committee or overseeing body - Restructure of existing agencies/ institutions - Government-initiated community or industry associations - Self-initiated civic or industry associations - Multi-party partnerships and collaborations - Policy networks - Interagency coordination and collaboration	Change or strengthen relationships amongst parties to facilitate responsibility-sharing, or create authority to influence responsibility-sharing.
7. *Social norms*	- Workplace/ professional culture - Traditional knowledge/ management regimes - Emergent organisation and leaders - Social movement/ protest	Establish informal, shared rules of engagement to share responsibility and/or impose social incentives and sanctions.

There is inevitably some overlap among the seven types of mechanisms. For example, the goal of collective decision-making could be to create a voluntary contract or agreement. Alternatively, policies and programs might aim to influence social norms as in the case of persuasive/ informational campaigns that seek to facilitate risk-reducing social norms. Additionally, multiple mechanisms are often actioned together. For example, complex policy packages may involve a combination of legal, regulatory, organisational and program delivery mechanisms.

1. Vision statements

Vision statements are goal or agenda-setting mechanisms that are non-binding. Examples are high level policy statements, statements of principle, non-binding social and ethical codes, and mission statements. They present a picture of either what responsibility-sharing should achieve (e.g. the standards by which to judge if it is effective or not) or what it should look like (e.g. the standards by which to judge if parties are being responsible or not). Vision statements are therefore very much normative, prescriptive mechanisms. They aim to steer or mobilise more procedural mechanisms by clarifying or establishing standards for assessing responsibility, rather than outlining a specific process or plan for achieving those standards. Unlike the 'hard' laws and regulations described below, which are also normative, vision statements are not generally strongly enforced by formal sanctions or penalties. However, some may be linked to social sanctions, such as social exclusion. For example, failing to act in accordance with a professional code of conduct may be grounds for a person being removed from a professional position or having their membership in an association revoked.

The National Strategy for Disaster Resilience (COAG, 2011) in Australia is one salient example of this type of mechanism, as is AFAC's position on bushfires and community safety (AFAC, 2010). Others are the Universal Declaration of Human Rights and the UNDP's principle of 'social co-responsibility' (*Case ID: 1-2-8*). As these examples show, vision statements can operate at a wide range of levels.

2. 'Hard' laws and regulation

'Hard' laws and regulation are formal, normative mechanisms that set out obligations and are tightly tied to legal sanctions. In one sense they are similar to vision statements, as they also seek to establish the standards by which responsibility is assessed, and non-compliance sanctioned. However, unlike vision statements they aim to compel or enforce obligations. Examples are constitutions, charters, legislation, traditional government regulation and some 'quasi' regulation that involves enforcement, such as national accreditation schemes.

A more specific example of this type of mechanism is the *Chain of Responsibility* legislation in Victoria (*Case ID: 2-1-2*). This legislation spreads legal liability for heavy freight transport accidents along the transportation supply chain. It recognises that parties that pressure drivers into unsafe driving practices share responsibility for resulting road accidents. It therefore creates a legal obligation for these other parties to provide working conditions for drivers that support greater road safety.

3. 'Soft' interventions

'Soft' interventions are the polices and programs that are the bread and butter of government agencies involved in risk management, although they are also used in the private sector (see for example *Case ID: 3-3-6* and *3-5-7*). They were also the most common type of responsibility-sharing mechanism used in the reviewed studies. In contrast to 'hard' laws and regulations, soft interventions aim to encourage rather than compel people to make decisions or change their behaviour in a desired way. Consequently they are not tied to strong sanctions or enforcement. A range of approaches exist, with some being more interventionist than others. Three common types, ranging from most to least interventionist, are incentive or disincentive schemes, direct service

delivery that alters people's access to services or resources, and persuasive/informational campaigns.

When used as mechanisms for sharing responsibility, soft interventions often aim to influence people's individual perceptions of their own or others' obligations, to encourage social norms supporting particular obligations, or to motivate people to act in accordance with these obligations. One important example is the way that persuasive/informational programs may encourage people to take responsibility for risk preparation or reduction by giving them information that increases their sense of control or empowerment in the face of risks. As outlined in the Background, the assessment of responsibility—including an individual's own personal responsibility—is mediated by perceptions or assumptions about degrees of control. This was recognised by McClure et al.(1999) who argued that informational campaigns in New Zealand about preparing for earthquakes that included distinctiveness information (e.g. that some buildings suffered more damage than others) could encourage more people to voluntarily prepare for earthquakes than if more generalised information was given (e.g. about earthquake magnitude) (*Case ID: 3-7-6*). This is because awareness that not all buildings are damaged the same way was linked in their study to a higher perception that this damage is controllable and preventable under some conditions. This contributes to increasing people's sense of personal control and hence responsibility.

4. Contracts and agreements

Contracts and agreements were the second most common type of mechanism in the reviewed cases. Contracts and other, looser forms of agreements create and specify obligations. They aim to determine relationships for responsibility-sharing and to clarify what is expected of the parties involved. They provide working rules for the process of sharing responsibility that establish grounds for determining when one party or another has failed to meet their obligations. They may also specify the penalties and sanctions that will be imposed when parties do not act in accordance with the agreed terms. Unlike the first three types of mechanisms, contracts and agreements tend to be more particular: applying to specific relationships and parties rather than society as a whole. These types of mechanism can be more or less formal. They include treaties and conventions, legally-binding voluntary contracts, public-private partnerships, agreed declarations of intent and also informal social relationships of reciprocity or mutual obligation.

One example of a formal contract is the Treaty of Waitangi (*Case ID: 4-1-9*) which outlines the agreed constitutional obligations of the State towards the Māori population in New Zealand. A less formal example is the informal, reciprocal social insurance that can be provided through social networks, as was documented in Eritrea (*Case ID: 4-8-1*) and Burkina Faso (*Case ID: 4-9-1*).

5. Collective inquiry and decision-making

Mechanisms that involve collective inquiry or decision-making put heavier emphasis on the process of negotiating responsibilities than do the previous mechanisms. Determining appropriate standards—rules, norms and expectations—is therefore an <u>outcome</u> of these mechanisms. Hence, this type of mechanism often precedes the creation of a vision statement, new law, government program or agreement of some kind that establish standards for responsibility-sharing. They are often used when there is conflict amongst parties engaged in collective risk management or a crisis of legitimacy in risk governance. Examples are votes, public inquiries and consultations, collaborative decision-making processes and participatory risk management arrangements. A recent example from Australian FEM is the Victorian 2009 Bushfires Royal Commission.

While there are significant differences between inquiries and decision-making processes, there are also important similarities. Collective inquiries involve some form of consultation with stakeholders to gather information about experiences and expectations regarding obligations for risk management, and particularly to expose where these expectations were not met in the past and why. The outcome of collective inquiries often includes recommendations to change or clarify roles

and responsibilities in future risk management arrangements in order to improve on past outcomes. Collective decision-making processes may also include inquiries into past roles and responsibilities in order to learn from past experiences. However, in these types of processes there is greater emphasis on negotiating future responsibility-sharing arrangements relative to probing and critiquing past ones. The end goal tends to be similar to inquiries, however, which is to change or clarify future roles and responsibilities. One example of a collective decision-making process that did not involve a formal inquiry process is the UK government's 'Managing Radioactive Waste Safely' program (*Case ID: 5-1-9*). This program evaluated options for waste management through a "comprehensive programme of public and stakeholder engagement" that aimed to ensure a high degree of accountability and legitimacy throughout the process (Cotton, 2009, p. 606).

6. Organisations, associations and networks

Changes in organisations and associations can also be used to shape responsibility-sharing. Examples of these types of mechanisms—ranging from more to less formal—are: creating or restructuring departments, committees and overseeing bodies; establishing community and industry associations; new partnerships and collaborations; and emergent networks. These mechanisms change or create relationships. In some cases, they create authority to influence responsibility-sharing. Importantly, new relationships give rise to new responsibilities. As Shaver and Schutte (2001) highlight, "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). Therefore, changing the nature of relationships can be a very powerful mechanism for shaping responsibility-sharing. Because new relationships create new responsibilities, new organisations and associations are often accompanied by the creation of a new vision statement that outlines the nature of the new responsibilities.

Importantly, the response of existing organisations and associations to changing conditions and events can also shape the way responsibility is shared. This is most evident following a risk event, when existing community organisations with no formal risk management role may take on responsibility for coordinating community preparation and recovery. One striking example of this is the role of faith-based and cultural associations in New Orleans before, during and after Hurricane Katrina (*Case ID: 6-6-5*). Patterson et al. (2010) describe how many community organisations drew on their existing resources, relationships and capabilities to take leading roles in preparation, evacuation, relief and recovery within their communities.

7. Social norms

Social norms are a type of informal institution. According to Ostrom (2000) they are "shared understandings about actions that are obligatory, permitted or forbidden" (p. 143-4). Social norms are not directed mechanisms. Rather, as with all informal institutions, they emerge out of interactions and common understandings amongst groups of people. Social norms can be embedded in workplace culture, traditional management regimes, and social movements, for example. As a type of mechanism, they overlap to some extent with contracts and agreements as well as organisation and associations, as both these types of mechanisms include loose or self-forming agreements and associations that are reinforced by associated social norms.

Although they are not codified or linked to authorised sanctions, social norms can nevertheless be extremely powerful mechanism for shaping responsibility-sharing. Social norms can create strong obligations and be associated with strong social sanctions when people do not act in accordance with them. When social norms shift, they can therefore create changes in the way responsibilities are shared. One example from Canada is the Walkerton community response to an E. coli outbreak in the town's main water supply in 2000 (*Case ID: 7-1-5*). Following the outbreak, donations of clean drinking water were delivered to the town but there was no government agency present in the small community to take charge of distribution. In response, an organised process for distributing the water emerged within the community (Murphy, 2007). During this process, a

new set of informal rules, relationships and authority for water distribution were created that did not exist prior to the event.

It is important to emphasize that the relationship between social norms and more formal mechanisms for sharing responsibility is complex and varied. In some cases, social norms for sharing responsibility may emerge to fill gaps left by more formal risk management arrangements. This was evident in the Walkerton case. In a different context (*Case ID: 7-2-7*), Swedish railway technicians developed a workplace culture that provided them with rules for how to balance their commitments to both workplace and public transportation safety, which were not addressed in workplace safety regulations (Sanne, 2008). In a different type of complex relationship, soft interventions directed by risk management agencies can seek to change social norms that structure responsibility-sharing. For example, this was an explicit goal of the 'Helping Each other Act Responsibly Together' or HEART campaign in Zambia (*Case ID: 3-2-2*). This program was instigated by a partnership of government, not-for-profit, development organisations and youth groups to encourage social norms amongst young people that were supportive of sexual practices that reduced HIV risk (Underwood, Hachonda, Serlemitsos, & Bharath-Kumar, 2006).

4 Discussion

The concept of frames is obviously central to the analysis in this report. Importantly, frames exist at multiple levels, ranging from more generalised (e.g. "meta-cultural" and "institutional" frames) to more specific (e.g. particular policy frames) (Schön & Rein, 1994, p. 33). More generalised frames will inform and shape more specific ones (McLennan & Handmer, 2011b, p. 15). The master frames listed in Table 3.1 are an example of generalised frames, which inform more detailed and diverse research theories. Policies and program are also shaped by generalised frames that inform their more specific frames targeted to the particular issue and context at hand. The impact of these frames is recognised in theory-driven approaches to policy and program evaluation. This collection of approaches assesses the effectiveness of outcomes in the context of the underlying model, frame or theory that informed the initial policy or program design (Funnell & Rogers, 2011, p. 3-35).

Schön and Rein (1994, p. 32) draw attention to two different types of specific frames that shape policy. The first type is rhetorical frames that shape policy discourses. These frames "underlie the persuasive use of story and argument in policy debate" (p. 32). The second type is action frames that "inform policy practice" (p. 32). Rhetorical and action frames do not always align very well in the messy world of policy-making. As a result, the way policy practice is framed at an operational level will not necessarily strongly reflect the way the related policy discourse has been framed.

Action frames in particular are often implicit rather than explicit in laws, regulations, and policies. One example of an implicit frame at work is in a government healthcare program in Sweden that provided assistance for older people in the home (*Case ID: 3-1-4*). According to analysis by Sundström and Johansson (2005), this program sought to restructure the balance of responsibility for elder care between families and the State. It aimed to encourage families to take on greater responsibility for elder care in the home in order to take pressure off Sweden's strained social welfare system in the face of a growing older population and declining resource base. The 'problem' was therefore framed as insufficient in-home support for elders. However, this problem-frame was not explicitly communicated as part of the program's rationale. An alternative way of framing this problem might have been as one of inadequate social welfare support for modern families caused by a rapid withdrawal of the State under the influence of neoliberal ideologies. Had this different frame dominated policy discourse in Sweden, it would likely have led to the development of a very different type of policy and program response. Which frame comes to dominate policy discourse and why has long been a central topic of research in public policy analysis, albeit under various monikers (Béland, 2009; John, 2003; Kingdon, 1984; Sabatier & Weible, 2007).

In all of the cases reviewed in the Stage 3 policy review, the mechanisms for sharing responsibility were underpinned by specific ways of framing the problem at hand within a local context. However, identifying the specific but implicit frames that underpinned the mechanisms in each case would require in-depth analysis that was beyond the scope of this review. Despite this, it was still possible to discern more generalised differences in framing between the different types of mechanisms and amongst cases that used the same type of mechanism. Reflecting on these frames can reveal diverse ways of thinking about and understanding the problems and processes of sharing responsibility in collective risk management. Importantly, frames have implications for practice that would otherwise be hidden during the process of deciding on and designing mechanisms to share responsibility.

Framing the problem

As the seven types of mechanisms aim to influence responsibility-sharing in different ways, they reflect some fundamental differences also in the way the underlying problem is understood. An

outline of these fundamental differences that is based on findings from the Stage 3 policy review is summarised in Table 4.1.

Table 4.1: Distinctions in generalised problem-framing across the mechanism types

Type	Intended influence on responsibility-sharing	Generalised problem frame
1. Vision statements	Steer and mobilise responsibility-sharing by outlining what it should achieve or look like (not strongly enforced or formally agreed to by the parties involved).	Shared standards for determining obligations are unclear or inappropriate; or there is a lack of commitment to them.
2. 'Hard' laws and regulations	Prescribe and compel responsibility-sharing through the use of legal obligations and authorised sanctions/penalties.	Parties will not share responsibility effectively by choice (or the outcomes are too important to risk should they choose not to).
3. 'Soft' interventions	Encourage responsibility-sharing by influencing decision-making, behaviour or access to services and resources.	Some parties (usually in civil society) do not have sufficient information, awareness, resources or motivation required to make decisions or behave in accordance with their obligations.
4. Contracts and agreements	Establish relationships for responsibility-sharing and clarify what is expected of the parties involved (may be binding and subject to penalty or non-binding and without penalty).	Some of the parties that influence risk management outcomes do not acknowledge or perceive themselves to have an obligation to do so; or they lack commitment to their obligations.
5. Collective inquiry & decision-making	Collectively query and/or decide where responsibility lies and/or how to share it.	There is conflict, disagreement or dissatisfaction regarding current responsibility-sharing arrangements.
6. Organisations and associations	Change or strengthen relationships amongst parties to facilitate responsibility-sharing, or create authority to influence responsibility-sharing.	The parties that influence risk management outcomes do not have the relationships that can support responsibility-sharing.
7. Social norms	Establish informal, shared rules of engagement to share responsibility and/or impose social incentives and sanctions.	The risk environment or social conditions have changed in ways that challenge existing norms; or there is a gap in formal risk management arrangements for sharing responsibility

The generalised problem-frame of the first three types of mechanisms all share a focus on shaping the responsibility-sharing process to adhere to pre-established or prescribed standards. For example, vision statements aim to shape responsibility-sharing by declaring what it should achieve or look like, and hence steering or motivating action at a more operational level. The problem implied in this type of mechanism is that existing standards for determining obligations are unclear or inappropriate, or there is a lack of commitment to them. The solution is therefore to set new, more appropriate standards to steer and mobilise more effective action.

Hard laws and regulations similarly set standards for responsibility-sharing, however they respond to a different type of problem. They prescribe or compel responsibility-sharing by linking obligations to authorised sanctions or penalties. The problem this type of mechanism implies is either that parties will not share responsibility effectively by choice or, alternatively, that the consequences if they do not (or the rights of others that would be infringed) are too important to leave these

consequences without some type of formal accountability or liability. The solution is therefore to compel parties to abide by the determined legal obligations and to impose sanctions when they do not so that 'irresponsible' parties can be held to account.

Meanwhile, soft interventions aim to encourage responsibility-sharing through the power of persuasion, information, incentives or resource allocation. They seek to change parties' decisions or behaviour to align with a predetermined set of standards for responsibility-sharing. The problem frame underlying these mechanisms is likely to be that some parties (which are usually from civil society) do not have sufficient information, awareness, resources or motivation to make decisions or behave in accordance with these pre-determined obligations. Soft interventions therefore aim to support or encourage whichever of these elements is found lacking.

The remaining types of mechanisms also intend to shape the process of responsibility-sharing. However, they are less likely to start with a pre-established idea of which standards parties involved in this process should adhere to. Instead, they are more likely to include a process for determining, agreeing on or negotiating standards amongst the parties involved. For example, the creation of contracts and agreements aims to establish relationships for responsibility-sharing and foster agreement (and commitment) from all parties regarding what is expected of them. The implied problem underlying this type of mechanism is that some of the parties that influence risk management outcomes do not acknowledge or perceive an obligation to do so; or they lack commitment to their obligations. The solution is therefore to establish a set of terms to which parties can agree and commit.

Collective inquiry and decision-making explicitly seeks to query and/or decide where responsibility lies and/or how to share it. The problem-frame underlying this approach is likely to be that there is conflict, disagreement or dissatisfaction regarding current responsibility-sharing arrangements. The solution is therefore to develop new arrangements that address parties' different perspectives, values, interests and priorities in order to foster legitimacy and acceptability of the way responsibility is shared. Organisations and associations also involve a process for determining responsibilities through the formation of new relationships. Implicit in this is an assumption that the parties that influence risk management outcomes do not have the relationships that can support responsibility-sharing. The solution is therefore to alter these relationships in ways that form new responsibilities, or strengthen existing ones. Finally, social norms establish informal, shared 'rules of engagement' to share responsibility. A shift in norms implies that something has changed in the risk environment or in social conditions that challenges the existing 'rules of engagement', or alternatively that there is a gap in responsibility-sharing in formal risk management arrangements that needs to be filled.

In sum, the different ways that the seven types of mechanisms intend to influence responsibility-sharing imply and reflect differences in the way the problem for sharing responsibility is framed. A key distinction amongst them is the emphasis they place on shaping responsibility-sharing practices to adhere to pre-established or prescribed standards, or alternatively including a process for determining, agreeing on or negotiating standards amongst the parties involved. This difference reflects a similar distinction made in broader collective action theory between mechanisms that are imposed or brought to collective action by external forces or authorities, and those that are developed by the parties engaged in collective action, referred to as 'self-governed' collective action (see for example Ostrom, 1990, p. 1-28).

Framing the process

Significant differences were also found amongst the ways the process of sharing responsibility was framed amongst cases that used the same broad type of mechanism. This is a second layer of framing. It reveals that even when the same or similar general problem-frame exists; the process of

sharing responsibility can still be framed very differently. Four key areas of difference were: the way that the parties exposed to risk were involved, the components of risk that were emphasised, the basis of—or grounds for—responsibility, and responses to situational drivers and local contexts.

Involvement of parties exposed to risk

The way that parties exposed to risk are involved in responsibility-sharing is an important distinction in the way the process of sharing responsibility is framed.

A key distinction concerns the degree to which the involvement of parties exposed to risk is seen to be on an individual or collective basis. A comparison of two cases of soft interventions in public health - 'nudging' (*Case ID: 3-4-3*) and the HEART campaign (*Case ID: 3-2-2*) - provides an example. 'Nudging' is a form of policy approach in public health in the USA aimed at encouraging people to make certain preferred health choices while avoiding the restriction of individual choice (Ménard, 2010). The HEART or "Helping Each other Act Responsibly Together" campaign was an education-entertainment media campaign that sought to change sexual practices amongst youth to reduce HIV risk (Underwood, et al., 2006). Hence both these mechanisms aimed to voluntarily encourage people to take greater responsibility for reducing their own health risks. However, 'nudging' is very firmly focused on decision-making by individuals, whereas the HEART campaign sought to influence social norms amongst youths collectively. Importantly, 'nudging' is strongly associated ideologically with liberalism, which emphasises individualism in political and social processes (Ménard, 2010).

The above example also illustrates a second key distinction in the way that parties exposed to risk are involved. For 'nudging', individuals in civil society are the targets of government-led initiatives but they are not involved in either deciding what the outcome of the initiative should be (goals) or how it should be implemented (process). In the case of the HEART campaign, groups in civil society was also targets of the initiative but representatives of these groups (NGOs and youth groups) were also strongly involved in deciding how the campaign should be designed and implemented (process). They were only partially involved in deciding what the outcomes should be (goals), however. This reveals three key ways that parties exposed to risk may be involved in mechanisms to share responsibility: as a target (e.g. whose degree of responsibility is targeted for change), as a goal-setter (e.g. that influences what responsibilities parties should have) and as an implementer (e.g. actively participating in the process to establish or alter how responsibility is shared).

Components of risk

A third feature of the way the process of sharing responsibility was framed that varied across the mechanisms was in the components of risk that were emphasized. As highlighted in the Background to this report, risk has multiple components, any of which may give rise to responsibility-sharing issues.

Exactly which components of risk and which conception of risk (objective or subjective) were the main target of responsibility-sharing varied across the cases and types of mechanisms. This shaped which risk management activities and outcomes were prioritised. For example, community disaster reduction associations established in Japan (*Case ID: 6-1-9*) focused on reducing risk primarily by reducing each community's vulnerability and increasing its adaptive capacity in the face of – predominantly natural - hazards. The Natural Catastrophe Insurance System in France (*Case ID: 4-3-1*) was also concerned with reducing risk from natural hazards. However it focused on transferring some of the economic risk away from exposed households and sharing it across government, the private insurance sector and communities by creating a public reinsurer. Both approaches aimed to reduce risks from natural hazards, but they focused on very different

components of that risk: vulnerability in the first case and risk transfer in the second. Hence they prioritised responsibility-sharing in different types of risk management activities.

Basis for responsibility

Similarly, mechanisms to share responsibility can emphasise a particular basis for being held responsible over others. For example, enacting or extending laws creates new legal obligations. Yet the basis for these obligations can be very different. A recent proposal to extend existing legislation in Canada for cattle trespassing to cover GMO wandering (*Case ID: 2-4-2*), is concerned with imposing legal obligations on biotechnology companies to constrain their activities in ways that protect rights of conventional and organic farmers to have GMO-free crops (Black & Wishart, 2008). Hence it focuses on constraining the activities of parties that increase the risk of others. Chain of Responsibility legislation in Victoria, Australia (*Case ID: 2-1-2*) also imposes legal obligations. However, rather than seeking to constrain one party's activities, this law was enacted to increase the obligations of many parties to contribute to creating transport safety risks (NTC, 2006). Specifically, this law makes people in positions right along the supply chain that put pressure on drivers to break road laws legally liable when those drivers commit a traffic offence in order to meet imposed deadlines. Whereas in the GMO case the basis of the new responsibility was to <u>constrain actions</u> that increased risk for others, in the Chain of Responsibility case it was to <u>oblige actions</u> that contributed to reducing the risk for others.

Situational drivers and contexts

The fourth area that influenced the way the process of sharing responsibility was framed was through the way they responded to situational drivers and contexts. All of the mechanisms were implemented in particular places and times in response to particular drivers. A wide range of drivers may shape the need for and characteristics of a particular mechanism. They could include a recent disaster event, the failure of a previous policy or program to meet its objectives, growing awareness of an issue through research, the pressure of public debate, the results of an inquiry or evaluation, a change in government, or the adoption of new international commitments. Further, every mechanism was implemented or proposed in the context of particular social, political, economic and environmental conditions.

A comparison of two mechanisms involving public security illustrates the significance of particular drivers and contextual conditions. The first mechanism is Business Improvement Districts (BIDs) in the USA (*Case ID: 4-6-1*). BIDs are a hybrid public/private system of public administration for commercial districts that are established to provide public services such as security and street cleaning as well as to undertake urban revitalisation. BIDs contractually spread responsibility for the provision of public services—formally a responsibility of local government—to the local business community. A rapid increase in the number of BIDs in the USA in recent years has been linked to particular socioeconomic conditions in North America. These include the decline of city centres, growth of urban sprawl, and the declining tax base of local governments (Hoyt & Gopal-Agge, 2007). Some commentators also link the rise of BIDs to a dominant neoliberal worldview that sees the individual accumulation of wealth as a key goal of cities, and hence positions business leaders as being best-placed to guide policy towards that end (Hoyt & Gopal-Agge, 2007). By contrast, community policing in the UK (*Case ID: 6-2-2*) tackles responsibility-sharing for public security in quite a different way, largely because of the very different drivers and contextual conditions that were at play at the time it was devised (Hughes & Rowe, 2007; Tilley, 2008). Community policing aims to reduce rising perceptions of risk amongst the public despite declining rates of crime and violence by, amongst other initiatives, involving communities in setting policing priorities in local areas and improving police visibility and accessibility. This mechanism involves establishing new collaborative partnerships between local governments, police and local communities. It was motivated growing awareness that the remoteness of the police from the public that was exacerbated by the past "zero-tolerance" policing model had contributed to a

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growing perception of public insecurity (Loader, 2006). It was also influenced by the emergence of new ways of modelling risk perception in criminology research (Hughes & Rowe, 2007).

Limitations of the review

It is important to be aware of two limitations of the Stage 3 policy review. First, the review was not exhaustive. Due to its broad scope, it does not include every potential mechanism available to share responsibility for collective risk management. Hence it should not be seen as a "shopping list" of ways that stakeholders might seek to address responsibility-sharing challenges. Rather, it is an indicative review that identifies a wide range of different types of mechanisms for the purpose of analysing key differences in the way responsibility-sharing problems and processes are framed and the implications this has for the solutions pursued. The review is not intended to contribute to making specific decisions about responsibility-sharing. Instead, it was designed to contribute to thinking about responsibility-sharing in an explicitly reflective and – potentially – revelatory way. In other words: its contribution to policy makers and practitioners should be understood as more conceptual than instrumental (see also Lavis 2006).

Similarly, it is also important to recognize that this review is not evaluative. It does not assess the efficiency or effectiveness of specific mechanisms used to share responsibility. Although the review found that some mechanisms are more strongly advocated or critiqued in recent research literature, it does not make claims about which mechanisms—or combinations of mechanisms— are better than others. A key reason for this is that a similar mechanism can function very differently in different places and under different conditions. Hence, claims about the effectiveness of different mechanisms cannot be made without directly considering the influence of contextual conditions and dynamics of a particular place and time. Evaluating effectiveness of a policy, intervention, or process necessarily involves asking and answering the more complicated and in-depth question of 'what works for whom, in what circumstances, in what respects and how'? (Pawson, Greenhalgh, Harvey, & Walshe, 2005, p.32).

Instrumental use of research and evaluations of effectiveness are, of course, vitally important to policy makers and practitioners and therefore both of these are important components of the *Sharing Responsibility* project. They will be introduced in Stages 4 and 5. This report should therefore be read as an important conceptual contribution to thinking about responsibility-sharing in Australian FEM, and as an important step towards making a more instrumental contribution to making decisions about responsibility-sharing in Australian FEM that are outcomes of later stages of the project.

5 Conclusions

As outlined in the Background, common problems do not produce identical responses. The problem of sharing responsibility in collective risk management is a common problem experienced across a range of settings. The cases reviewed in the Stage 3 policy reflect this. They cover a wide spectrum of political and administrative settings, as well as a range of different policy sectors that deal with risk and uncertainty. Across these cases, the mechanisms used or proposed as responses to the common problem of sharing responsibility vary significantly. There are many reasons for this, but one central factor is the impact of frames.

Two important layers of frames were found to shape the mechanisms identified at a general, comparative level. The first is the problem-frame that concerns the way the underlying problem for sharing responsibility was understood. As the review showed, different types of mechanisms reflect some fundamental differences in their associated problem-frame. The second layer is the way the process of sharing responsibility is framed. Amongst cases that have similar problem-frames, there were significant differences in the framing of the responsibility-sharing process. Key areas of difference related to the way that parties exposed to risk were involved, the components of risk that were emphasised, the basis for assessing and attributing responsibility, and the situational drivers and contexts to which the mechanisms responded.

The significance and relevance of this analysis in the context of Australian FEM stems from the three positions put forward at the beginning of the report: first, that the wicked problem of sharing responsibility is an important dilemma in Australian FEM that needs to be addressed; second, that reflecting on frames is necessary for dealing with wicked problems, and; third, that there is much to be learned from reflecting on the way this problem has been responded to in other contexts. The aim of the Stage 3 policy review was to stimulate new ways of thinking about how to tackle this particular wicked problem in Australian FEM. This report contributes to an ongoing endeavour. In the next stage the *Sharing Responsibility* project will examine responsibility-sharing in the local, Australian context. Case studies will be analysed by drawing from the frame-reflective thinking reported here.

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

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8 Appendix – Cases and sources reviewed

(<u>Note</u>: case ID denotes '*Mechanism type'-'item number'-'master frame*')

Case ID	Type	Case	Mechanism	Sector	Location	Parties	Purpose (*as stated in main source*)	Status	Sources (**Main;** *secondary)*	Master frame (**Main source**)
1-1-3	1) Vision statements	post-1901 Famine Codes	Social/ ethical code	Food security	India	Public-civic (State-citizens)	Establish a nation-wide famine relief system	Implemented (1870s); Revised (1901)	De Waal (1996), *Hall-Matthews (1996)*	3. Social contract
1-2-8	1) Vision statements	Social co-responsibility	Statement of principle	Social welfare	Caribbean and Latin America	Public-civic (family, men/women, State, market, society)	Encourage policy change to reconcile spheres of work and family by redistributing care responsibilities between men and women, as well asamong the family, the State, the market and society as a whole.	Proposed	UNDP (2009)	8. Distribution
1-3-4	1) Vision statements	Code of social and family responsibility	Social code of conduct ("Beneficiary contract")	Human services	New Zealand	Public-civic (Government-citizens-society-families)	Promote public debate on the responsibilities of individuals and families and explore the possibility of having a Code of Social and Family Responsibility for New Zealand (Response analysis team, 1998); Clarify relationships between the State and citizens in relation to the welfare system (Larner, 2000)	Proposed (1998) *Note: code was abandoned*	Larner (2000); *Response analysis team (1998)*	4. Governance
2-1-2	2) 'Hard' laws and regulations	Chain of Responsibility legislation, Victoria	New legislation	Transport safety	Australia	Public-private (Government, transport industry [whole supply chain])	Share responsibility for transport accidents along the supply chain (legal liability)	Implemented (2003)	Jones (2003); *NTC (2006)*	2. Normative standards
2-2-9	2) 'Hard' laws and regulations	Mexico City's Emergency Building Code	Traditional regulation	Disaster management	Mexico	Public-private (Government, property owners)	Strengthen buildings in high earthquake risk areas following major quake	Implemented (1985)	Spence (2004)	9. Practice
2-3-2	2) 'Hard' laws and regulations	Charter of human rights and responsibilities, Victoria	Act of parliament (new legislation)	Human rights	Australia	Public-civic (Government-society)	Ensure that human rights are taken into account in early stages of developing law and policy; foster dialogue within & between government arms re consistency of existing laws and government actions re enacted rights.	Implemented (2006)	Williams (2006); *Government of Victoria (2006)*	2. Normative standards
2-4-2	2) 'Hard' laws and	GMO gene-	Expansion of existing	Environmental	Canada	Public-private-civic (Biotechnology	Improve balance of legal rights and obligations of biotechnology	Proposed	Black and	2. Normative

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	regulations	wandering	legislation to new context	risk		companies – farmers – federal government)	companies	(2008)	Wishart (2008)	standards
2-5-1	2) 'Hard' laws and regulations	Performance-based public health regulation	Quasi-regulation	Public health	USA	Public-private (Governments-businesses)	Secure business contribution to reduce public health problems arising from hazardous consumer products (e.g. junk food, guns)	Proposed (2009)	Sugarman (2009)	1. Social dilemma
3-1-4	3) 'Soft' interventions	Home Help	Direct service delivery (needs assessed)	Human services	Sweden	Public-civic (Government-individuals-families	Fee-based and needs-assessed public service to assist elders in the home with household tasks and personal care	Implemented (1950s)	Sundström and Johansson (2005)	4.Governance
3-2-2	3) 'Soft' interventions	The Helping Each other Act Responsibly Together (HEART) campaign	Informational/ persuasive (entertainment-education)	Public health	Zambia	Public-civic (Government- NGOs-youth groups-society)	Encourage social norms supportive of sexual practices that reduce HIV risk amongst young people (Underwood, HEART); encourage dialogue to support social change (Papa, entertainment-education).	Implemented (1998)	Underwood, Hachonda, et al. (2006); *Guttman and Ressler (2001); Papa and Singhal (2009).*	2. Normative standards (Guttman and Ressler 2001)
3-3-6	3) 'Soft' interventions	Oil spill, South Korea	Persuasive/ informational campaign regarding company social responsibility history	Disaster management	South Korea	Private-civic (Oil company-public)	Provide specific information about company's positive social responsibility history to alter people's attributions of responsibility for oil spill	Implemented (2007)	Jeong (2009)	6. Attribution
3-4-3	3) 'Soft' interventions	'Nudging'	Informational/ persuasive policy instrument	Public health	USA	Public-civic (Government agencies-individuals)	Alter people's decisions and behaviours to promote better health outcomes without restricting individual choice	Proposed (2003) implemented (various)	Ménard (2010); *Thaler and Sunstein (2008)*	3. Social contract
3-5-7	3) 'Soft' interventions	Siting hazardous facilities	Informational/ persuasive campaigns	Hazardous waste management	USA	Public-civic	Enable risk communication under conditions of broad social distrust	Proposed (1992)	Kasperson (1992)	7. Socio-cultural context
3-6-6	3) 'Soft' interventions	Workplace safety management	Management performance appraisal system	Workplace safety	USA	Private-private (Employers-employees)	Include safety performance in management performance appraisal to increase management commitment to leading development of a positive workplace 'safety climate' ("a coherent set of perceptions and expectations that employees have regarding safety in their organization", p.12)	Proposed (1994)	DeJoy (1994)	6. Attribution
3-7-6	3) 'Soft' interventions	Earthquake damage	Persuasive/ informational	Disaster management	New Zealand	Public-civic (Government regulators-	Teach people about range of causes that contribute to building damage in	Proposed (1999)	McClure (1999)	6. Attribution

		reduction	campaign about range of causes of building damage during earthquakes			public)	order to increase perceptions that damage is preventable (e.g. controllable)			
3-8-6	3) 'Soft' interventions	Food risk perceptions of consumers	Persuasive/ informational campaign regarding controllability of food risks	Food security	Finland	Public-private-civic (Government-food producers/ distributors-public)	Build people's sense of personal controllability and hence personal responsibility for food risks; reduce avoidance coping (e.g. denial)	Proposed (2009)	Leikas et al. (2009)	6. Attribution
3-9-10	3) 'Soft' interventions	Accident investigation manuals	Systematic accident models	Workplace safety	Sweden	Private-private (Accident investigators-employers-employees)	Expand scope of models underlying accident investigations to focus on whole safety system (e.g. social, economic, technical, human & organisational components)	Proposed (2009)	Lundberg (2009)	10. Complex systems
3-10-7	3) 'Soft' interventions	Communication of health risks – immunisation and air pollution	Informational/ persuasive campaigns	Public health	UK	Public-civic (Health agencies-public)	Engage with social equity issues and existing social norms; empower freedom of choice; recognise stress created by personal responsibilities in light of scientific uncertainty	Proposed (2005)	Petts (2005)	7. Socio-cultural context
3-11-9	3) 'Soft' interventions	Flexible disaster planning policy in housing	Complex policy/planning package	Disaster management (recover)	Australia	Public-civic (State housing authorities-tenants/householders)	Assist tenants and householders, and assess and repair properties following cyclones, storms, floods	Implemented	Jacobs (2011)	9. Practice
3-12-9	3) 'Soft' interventions	Flood prevention action programs	Complex policy package	Disaster management	France	Public-public-civic (Federal government-local government-households)	Reduce overall flood risk at river basin scale	Implemented (2002/ 2006)	Erdlenbruch, Thoyer, et al. (2009)	9. Practice
3-13-8	3) 'Soft' interventions	Vulnerability management	Complex policy package	Disaster management	USA	Public-public (emergency management agencies and other government agencies; all levels of government)	"Decrease the variables that lead to disasters while concurrently increasing the ability of individuals, organisations, jurisdictions and nations to prevent, prepare for, or react to them effectively… liability reduction and capacity building" (p. 308)	Proposed (2008)	McEntire (2008)	8. Distribution
3-14-8	3) 'Soft' interventions	Social vulnerability index (SoVI)	Direct government delivery of public services	Disaster management	USA	Public-civic (State-public)	Enable agencies to take greater responsibility for protecting most vulnerable by identifying geographic discrepancies in social vulnerability	Proposed (2003)	Cutter (2006)	8. Distribution
4-1-9	4) Contracts and	Treaty of Waitangi	Constitution/treaty	Social security	New Zealand	Public-civic (State- Māori population)	Outlines constitutional obligations of the State towards Māori population	Implemented (1840)	Jacobs (2000)	9. Practice

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	agreements								
4-2-9	4) Contracts and agreements	Responsibility deal pledges	Voluntary non-binding (?) agreements	Public health/ business waste	UK	Public-private (Health department, private industry and business; some NGOs)	Supplement government public health policies and increase contribution from private sector	Implemented(2010)	Buttriss (2011); *UK Department of Health (2011)*	9. Practice
4-3-1	4) Contracts and agreements	Cat Nat (Natural Catastrophe Insurance System)	Public-private partnership (contract)	Disaster management	France	Public-private (Government, insurers)	Increase efficiency of natural catastrophe insurance and overcome "Samaritan's dilemma"	Implemented (1982)	Michel-Kerja and de Marcellis-Warin (2006); *Vallet (2004).*	1. Social dilemma
4-4-9	4) Contracts and agreements	Indigenous shared responsibility agreements	Public-civic voluntary agreement	Education/ public health	Australia	Public-civic (State agencies-community organisations)	Delineate contributions to long-term improvements in indigenous communities	Implemented (2004)	Anderson (2006)	9. Practice
4-5-4	4) Contracts and agreements	Community Care Network	Public-private partnership (non-binding)	Public health care	USA	Public-private-civic (State agencies – private health providers – community organisations)	Local collaboration for human and health service delivery	Implemented (Late 1990s)	Weiner and Alexander (1998)	4. Governance
4-6-1	4) Contracts and agreements	Business improvement districts	Hybrid public/ private administration/ contract	Urban renewal & public security	USA	Public-private (Local government-business community)	Overcome local government limitations in providing public services	Implemented (various times, beginning 1970s)	Brooks (2008); *Hoyt and Gopal-Agge (2007)*	1. Social dilemma
4-7-3	4) Contracts and agreements	Technological constitution and citizenship	Constitution/ declaration of rights	Technology	N/A	Public-civic (State-citizens)	Reconcile potential benefits and injuries of technology to humans	Proposed (1992)	Frankenfeld (1992)	3. Social contract
4-8-1	4) Contracts and agreements	Social relationships of reciprocity	Informal social insurance	Social welfare	Eritrea	Civic-civic (Community)	Uses local social capital to alleviate unexpected social costs	Implemented (not given)	Habtom and Ruys (2007)	1. Social dilemma
4-9-1	4) Contracts and agreements	Social relationships of reciprocity	Informal risk-sharing arrangements	Public health	Burkina Faso	Civic-civic (Community)	Local traditions of solidarity and reciprocity that provide informal health insurance	Implemented (not given)	Johannes et al. (2002)	1. Social dilemma
5-1-9	5) Collective inquiry & decision-making	Radioactive waste management	Deliberative decision-making process	New technology	UK	Public- private-civic-science (Government-public-industry-science)	Establish 'a legitimate, technically sound and publicly supportable long-term management strategy'	Implemented (2008)	Cotton (2009)	9. Practice

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5-2-9	5) Collective inquiry & decision-making	Shared decision-making for personal health care	Client-practitioner voluntary collaboration	Public health	USA	Private-civic (Health practitioner-client)	Achieve better health outcomes by client's active participation in shared decision-making about treatment	Implemented (date not given)	Adams and Drake (2006)	9. Practice
5-3-7	5) Collective inquiry & decision-making	Communication of volcanic risk	Community-authority dialogue	Disaster management	Montserrat	Public-civic-scientific (Government-scientific community-public)	Develop a mutual understanding of an acceptable or tolerable risk	Proposed (2008)	Haynes (2008)	7. Socio-cultural context
5-4-6	5) Collective inquiry & decision-making	Wildland-urban wildfire risk management	Public participation in wildfire risk assessment and management	Disaster management	USA	Public-civic (Risk management agencies-communities)	Maintain and restore trust between experts and communities	Proposed (2008)	Cohn et al. (2008)	6. Attribution
5-5-8	5) Collective inquiry & decision-making	New technology regulation	Design institutional mechanisms for decision-making	New technologies	N/A	Public-civic (Regulatory institutions-public)	"Ensure an equitable distribution of risk between various groups such as rich and poor, and present and future generations" (p. 501, abstract).	Proposed (2010)	Ferretti (2010)	8. Distribution
6-1-9	6) Organisations and associations	Community disaster reduction associations	Community association	Disaster management	Japan	Public-civic (Community-local government)	Increase community self-reliance during disasters	Implemented (1995)	Bajek, Matsuda, et al. (2008)	9. Practice
6-2-2	6) Organisations and associations	National Reassurance Policing Project / Community policing	Public-civic partnership (non-binding)	Public security	UK	Public-civic (Police-local government-community)	Change risk perception (increase public sense of security)	Implemented (2003)	Hughes and Roe (2007); *Quinton and Tuffin (2007)*	2. Normative standards
6-3-7	6) Organisations and associations	Voluntary emissions control action programme	Collective voluntary action	Environmental risk/ public health	UK	Private-private (Private industry [whole supply chain])	To monitor and reduce emissions of controversial chemical 'Deca' along textiles supply chain (to avoid potential legislation to ban Deca)	Implemented (2004)	Busby, Alcock, et al. (2009)	7. Socio-cultural context
6-4-5	6) Organisations and associations	Post-tsunami recovery	Formal community networks	Disaster management (recovery)	Sri Lanka	Civic-civic (Community)	Increase people's perceptions of livelihood recovery	Implemented (2004)	Minamoto (2010)	5. Social capacity
6-5-8	6) Organisations and associations	Women's non-State crisis centres	Civic assistance organisation	Personal violence	Russia	Civic-civic (Individuals-NGOs)	"Institutionalization of assistance to victims of domestic violence" to fill gap in public provision of assistance	Implemented (early 1990s)	Stuvøy (2010)	8. Distribution
6-6-5	6) Organisations and	Community association response to	Community associations	Disaster management (recovery)	USA	Civic-civic (community associations-community)	Use existing trust and moral authority to urge cooperative behaviour and teamwork	Implemented (2005)	Patterson (2010)	5. Social capacity

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		associations	disaster								
6-7-7	6) Organisations and associations	Citizen engagement to manage range of technological risks	Trust-building	New technology	UK	Public-civic (Government-public)	Encourage greater active citizen engagement in risk management by demonstrating institutional capacity to operate responsibly (trust-building) through institutional restructuring to increase transparency	Proposed (2008)	Bickerstaff (2008)	7. Socio-cultural context
6-8-4	6) Organisations and associations	Climate change policy	Policy networks	Climate change	Australia	Public-private-civic (State-industry-society)	Address accountability conflicts regarding climate change through involvement of new actors in existing policy networks	Implemented (1990s)	Bulkeley (2001)	4. Governance
6-9-10	6) Organisations and associations	Hurricane Katrina crisis management	"Surprise management" model for interagency coordination and collaboration	Disaster management	USA	Public-public (emergency management agencies across levels of government)	Increase the ability of the system to avoid breakdown through a model that is "adaptive, collaborative, and citizen engaging and draws on chaos and complexity theories to cope with hyper-uncertainties and unknowns" (p. 149, abstract)	Proposed (2007)	Farazmand (2007)	10. Complex systems
7-1-5	7) Social norms	Community response to Walkerton E. Coli disaster	Emergent organisation & leadership	Disaster management (recovery)	Canada	Civic-civic (Community-donors)	Distribute donated bottled water in absence of formal municipal emergency response organisation	Implemented (2000)	Murphy (2007)	5. Social capacity
7-2-7	7) Social norms	Railway maintenance safety	Social norms	Public safety/OH&S	Sweden	Public-private-civic (Employees-employers-public)	Compensate for inadequate planning/regulation in order that railway technicians can negotiate trade-offs in public & workplace safety	Implemented (no date)	Sanne (2008)	7. Socio-cultural context
7-3-5	7) Social norms	Hurricane Katrina recovery	Trust and moral authority	Disaster management (recovery)	USA	Civic-civic (Community)	Enable community organisations to urge cooperative behaviour and teamwork	Implemented (2005)	Patterson (2010)	5. Social capacity
7-4-3	7) Social norms	Climate change adaptation by Saami reindeer herders	Traditional ecological knowledge	Climate change	Norway	Civic-civic (Community)	Sustain mode of subsistence and flexibility to adapt to climate change impacts	Implemented (no date)	Reinert et al. (2008); (O'Brien, Hayward, & Berkes, 2009)	3. Social contract
7-5-5	7) Social norms	Post-earthquake rehabilitation and reconstruction programs	Trust, social norms, participation, and network	Disaster management (recovery)	Japan/ India	Civic-civic (Community)	Foster pro-active participation in the reconstruction program and speedier recovery	Implemented (1995 Kobe; 2001, Gujarat)	Nakagawa and Shaw (2004)	5. Social capacity