

**Emergency Risk Management in Australia and the Pacific:  
Information, Policy and Governance**

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## **Emergency Risk Management in Australia and the Pacific: Information, Policy and Governance**

**ABSTRACT:** *Emergency risk management has evolved significantly since it was first introduced in Australia in 1995. A number of states adopted the approach quickly and developed processes to assist local governments, in particular, to develop their emergency management plans based on the risk management process. With changes to the criteria for NDRRA funding, a flurry of activity followed in which many emergency risk assessment projects were undertaken. The risk management approach also found its way into the Pacific through the work of SOPAC.*

*A considerable amount of public money was spent on these studies over six or seven years. Their quality varied considerably, with only a small proportion being based on good risk science and comprehensive information. While those local governments did 'tick the box' as having undertaken an emergency risk assessment, little of that effort was translated into local emergency management plans or risk reduction projects.*

*In more recent years considerable effort has been expended in establishing a 'standard' emergency risk assessment methodology (i.e. NERAG). It has unfortunately been turned into the veritable bureaucratic 'camel' and is widely ignored in most jurisdictions. At the same time, changes of government in several jurisdictions and the recommendations from various post-disaster judicial inquiries have led to changes in the structural arrangements of emergency management agencies and the reworking of policies and procedures. Much of that activity has been undertaken in the absence of the detailed information needed to support them.*

*This paper explores the critical linkages between information, emergency risk assessment and risk audit procedures in the development of emergency risk management policy, procedures and governance. It addresses these issues both in Australia and in Pacific Island Countries.*

**Keywords:** *Emergency risk management; Information infrastructures; Risk audit; Risk science.*

### **Introduction**

The past two decades have seen significant changes in the way that emergencies are managed, both within Australia and internationally. This is largely because of the impetus provided by the research and analysis undertaken during the United Nations-sponsored International Decade for Natural Disaster Reduction (IDNDR - 1990-2000) that gave rise to the 2005 *Hyogo Framework for Action 2005-2015: building the resilience of nations and communities to disasters* (ISDR, 2007). This was also a period of significant disaster events both within Australia and across the Indo-Pacific region, including major bushfires, floods, earthquakes, tsunamis, cyclones and volcanic eruptions, which brought into sharp focus the need for a stronger emphasis on mitigation and disaster risk reduction.

Emergency (or disaster) management, like most enterprises, periodically introduces new concepts and terminology to respond to emerging issues and to keep its message fresh. Being an enterprise that is largely in the public sector, the propensity to change its vocabulary is

perhaps greater than in other sectors. The term “disaster”, for example, formed part of the name of the first Commonwealth coordination agency, the Natural Disasters Organisation, established in 1974. It was replaced, at least in name, by Emergency Management Australia a decade later. In some jurisdictions, such as Queensland, the terminology has cycled from “emergency” to “disaster” and back again more than once since 1990, usually at the whim of a new government that wanted to differentiate itself from its predecessor.

It is also common for a “dominant paradigm” to become established. For example, the PPRR approach (prevent, prepare, respond, recover) was introduced to Australia in 1984 and remains well entrenched. Even more fundamental has been the shift from the PPRR approach to one of emergency risk management.

## **Dominant Paradigms**

The practice of emergency management shares many common features within Australia and internationally. Six of the more significant paradigms that have become dominant across Australia and the Pacific Island Countries (PIC) at different stages over the past two decades are discussed here.

### *Risk Management*

The first edition of AS/NZS 4360 *Risk Management* was published in 1995 and was introduced to the emergency management community at a workshop at the Australian Emergency Management Institute (AEMI) in November of that year. A subsequent AEMI workshop in March 1996 was held to advance the implementation of the standard within the emergency management field. According to the overview contained in EMA (1999):

*The aim of the workshop was “to identify, in the context of public administration, whether a systematic risk management approach (as represented by AS/NZS 4360) could enhance emergency management”. It was decided that risk management should be promoted as the basis for emergency management over a 3-5 year period.*

Most States and Territories embraced the concepts and principles of risk management very quickly, though some were reluctant to rapidly move beyond the PPRR doctrine.

Publication of AS/NZS 4360 and its adaptation to emergency management was very timely given that the process was already being followed, in essence, in key IDNDR-supported research projects including the *Tropical Cyclone Coastal Impacts Project* (TCCIP) led by the Bureau of Meteorology, the *National Geohazards Vulnerability of Urban Communities Project* (otherwise known as the *Cities Project*) led by the Australian Geological Survey Organisation (now Geoscience Australia) and its counterpart *Pacific Cities Project* led by Suva-based SOPAC (South Pacific Applied Geoscience Commission – now the Applied Geoscience and Technology Division of the Secretariat of the Pacific Community - SPC) and supported by agencies from both Australia and New Zealand. Those projects each had a strong foundation of both the physical and social sciences so as to develop a comprehensive understanding of the risks posed by a wide range of hazards. Publication of the standard, and its adoption by the emergency management community, provided these research projects with a clear methodological underpinning.

Queensland was the first jurisdiction to implement “disaster risk management” as policy and produced the first risk assessment methodology guideline (Zamecka and Buchanan, 1999) aimed primarily at local governments.

### *Mitigation, Relief and Recovery*

In 2002 the Council of Australian Governments (COAG) commissioned a review of Australia’s approach in dealing with natural disasters with a focus on “mitigation to guard against disasters, response during a disaster event, and post-disaster relief and recovery” (COAG, 2004). The review, conducted by a high level group of officials, identified strengths and weaknesses and concluded that “current arrangements could be improved to ensure that Australia has a world-class national framework for natural disaster management – thus achieving safer, more sustainable communities, and reduced risk, damage and losses”. (emphasis added)

A new national framework, based on 12 reform commitments, was articulated as the foundation for this new approach. Central to that approach was “a systematic and widespread national process of disaster risk assessments and, most importantly, a fundamental shift in focus towards cost-effective, evidence-based disaster mitigation.” The first two of the reform commitments were:

1. *develop and implement a five-year national programme of systematic and rigorous disaster risk assessments.*
2. *establish a nationally consistent system of data collection, research and analysis to ensure a sound knowledge base on natural disasters and disaster mitigation.*

Over the ensuing decade a large number of disaster risk assessments were undertaken, mostly at local government level, funded jointly by the Commonwealth, the States and Territories, and local governments, to the tune of several hundred millions of dollars. Most of these studies had been completed before the National Emergency Risk Assessment Guideline (NERAG) had been published and disseminated (EMA, 2010).

In the absence of a standard approach to emergency risk assessment ERSA employs the approach developed by Ken Granger through his involvement in the TCCIP, Cities Project and Pacific Cities Project between 1990 and 2001. This approach has far more in common with the SMUG (Seriousness, Manageability, Urgency, Growth) risk assessment methodology adopted by the New Zealand Ministry of Civil Defence and Emergency Management in 2002 (MCDEM, 2002), than it does with NERAG.

### *“Five R”*

A number of high level inquiries were launched following the bushfires that caused several deaths and much destruction on the outskirts of Canberra in 2003. COAG commissioned an inquiry into bushfire mitigation and management (Ellis, Kanowski and Whelan, 2004), which recommended that the PPRR doctrine be replaced with a “five R” approach (research, information and analysis; risk modification; readiness; response; recovery) to ensure that the important “lessons learned” first step is entrenched in the overall process. The “Research, Information and Analysis” stage was clearly consistent with the second of the reform commitments described above and validated the work of the TCCIP and *Cities Project*.

The “five R” approach has yet to fully supplant the PPRR approach.

## *Disaster Resilience*

In 2005 a conference convened by the UN International Strategy for Disaster Reduction (ISDR) produced the *Hyogo Framework for Action 2005-2015: Building the resilience of nations and communities to disasters* (ISDR, 2007). This framework has three strategic goals:

- (a) *The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction;*
- (b) *The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards;*
- (c) *The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities.*

In adopting the Hyogo Framework, the Australian Ministerial Council for Police and Emergency Management agreed in 2008 that the future direction for Australian emergency management should be based on “achieving community and organisational resilience”. To build on this work, COAG agreed to adopt a whole-of-nation resilience-based approach to disaster management, which recognised that a national, coordinated and cooperative effort was needed to enhance Australia’s capacity to withstand and recover from emergencies and disasters. The *National Strategy for Disaster Resilience* was published in 2011 (COAG, 2011).

It is interesting to note the shift from a focus on “sustainability” in COAG (2004) to “resilience” in COAG (2011). One significant difference would seem to be a shift from government responsibility to one of shared responsibility as articulated in COAG (2011) in which “resilience” is seen as being:

*... the collective responsibility of all sectors of society, including all levels of government, business, the non-government sector and individuals.*

It does not appear that this policy of shared responsibility has found its way much beyond the walls of a small number of public sector agencies.

A significant difference in the thrust of the resilience policy from that of the National Disaster Relief and Recovery Arrangements (NDRRA) is contained in the third of the strategic goals, that is, to “build back better” rather than simply restore what was damaged.

## *Climate Change Adaptation*

In 2007 the Australian Department of Climate Change and Energy Efficiency published the *National Climate Change Adaptation Framework* (DCC&EF, 2007). In discussing “natural disaster management” the Framework refers to the COAG *Mitigation, relief and recovery* report (COAG, 2004) and identifies two areas for potential action:

- a) *Undertake research to improve knowledge on the nature and expected extent of changes to existing risk profiles as a result of climate change for key events such as bushfires, flooding, cyclones, storm surges, wind and hail damage.*

b) *Incorporate climate change impacts into planning for natural disaster response management, in particular the risk and changing behaviour from bushfires, flooding, cyclones, storm surges, wind and extremes in temperature. This will include:*

- *incorporating climate change issues in the review of the Natural Disaster Mitigation Programme and proposals submitted under the Programme; and*
- *improving information for emergency services and communities to foster awareness of climate change and adaptation responses.*

In terms of funding provided under the Natural Disaster Resilience Program, it is evident that there is a move towards integrating the emergency risk management program with that focused on climate change adaptation. A similar movement has begun with funded projects in the PIC.

A major difficulty in incorporating climate change adaptation into the emergency risk assessment framework is that information on all three risk elements – the hazard phenomenon, the community elements exposed and their level of vulnerability to that impact – will be hypothetical. It is certainly possible to postulate a climate change-influenced inundation regime and base event scenarios on that regime; however, knowing where development will have been established 25 or 50 years into the future and what changes there will have been in the vulnerability of an aged population and built inventory is essentially guess work.

#### *All Hazards*

The “all hazards approach” to emergency management emerged, along with PPRR, in 1984. It is clearly the most appropriate approach to effective emergency management because there is no certainty as to what hazard will impact a community next. The emergency risk assessments that have been conducted across the full range of both natural and anthropogenic hazards are in a very small minority. Most have been confined by the policies of the funding authorities to those natural hazards that are covered by the NDRRA. Table 1 illustrates the range of hazards that have been identified as posing a threat to Australia and PIC communities – those that fall within the NDRRA ambit are shown in bold.

Table 1: A typology of hazard phenomena (Granger, 2014)

<b>Atmospheric</b>	<b>Earth</b>	<b>Biological</b>	<b>Human</b>
<b>tropical cyclone</b>	<b>landslide</b>	human epidemic	transport accident
<b>east coast low</b>	<b>earthquake</b>	animal epidemic	industrial accident
<b>severe storm/tornado</b>	<b>tsunamis</b>	plant epidemic	structure failure
<b>flood</b>	subsidence	plagues & pestilence	structure fire
<b>storm tide</b>	coastal erosion		hazardous materials
<b>bushfire</b>	meteorite strike		contamination/pollution
temperature extremes	volcanic eruptions		infrastructure failure
drought			space debris re-entry
fog and frost			social disorder & crime
climate change			terrorism

It is worth noting that by far the most costly and pervasive hazard (drought) is not included under NDRRA, nor is the most lethal hazard (temperature extremes).

Drought ceased to be defined as a “natural disaster” in Australia in April 1989 when the Commonwealth Government removed drought relief funding from the (then) Natural Disaster Relief Arrangements. This was a budget administrative change based on the view that drought was a “natural, recurring and endemic feature of the Australian environment” and that “the prospect of variable seasonal conditions is a normal commercial risk that must be incorporated into the management of Australian rural enterprises” (DPRTF, 1990).<sup>1</sup> The fact that floods, bushfires, tropical cyclones and severe storms were not viewed in the same light remains one of the more interesting policy conundrums.

Heatwave has traditionally been viewed as a public health issue and thus not the concern of the regular emergency management agencies; however, this hazard now appears to take priority in emergency risk assessments covered by climate change adaptation funding but remains outside the NDRRA funding scope. Episodes of abnormally cold weather (which also kill many people) are rarely considered at all.

From this brief review of the paradigms that have dominated emergency management over the past three decades, three recurrent themes stand out: information, management and policy.

### **Information for Emergency Management**

The current version of the risk management standard - *AS/NZS ISO 31000:2009* (SA/SNZ, 2009) - sees risk as:

*...the effect of uncertainty on objectives.*

We see this as being a much more appropriate definition than the probability/consequence-focused definitions contained in earlier versions of the standard and adopted in NERAG, especially when we consider the objective of emergency risk management. This is usually taken to be to achieve safer and more resilient (or more sustainable) communities. In emergency management then, **risk is the effect of uncertainty on community safety and resilience**, where ‘uncertainty’, to quote ISO 31000 is:

*...the state, even partial, of deficiency of information related to, understanding or knowledge of an event, its consequence, or likelihood.*

It follows, therefore, that the most effective way to manage emergency risk is to eliminate, as much as possible, the **deficiency of information**. The significance of information to the process of emergency management has long been recognised, for example Everson (1986) stated:

*Emergency management is 10 percent telecommunications, 20 percent operations, and 70 percent information. Information, like people and money, is a resource and the only resource that makes possible the coordination of vital services during an emergency.*

Referring to Everson’s observation, Granger and Johnson (1999) comment that:

*... the proportions of resources devoted in Australia to these three factors would appear to be more like 20 percent telecommunications, 70 percent operations, and 10 percent information.*

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<sup>1</sup> Drought was publicly recognised as a “natural disaster” by Prime Minister Abbott in March 2014 but relief funding remains outside the NDRRA system.

*Indeed, the aphorism 'information-free decision making' has been applied to what is seen as a very common situation within the emergency management process.*

While this assessment may be seen by some as being a little harsh today, it must be observed that the second reform commitment of COAG (2004) to establish *a nationally consistent system of data collection, research and analysis* is still a very long way from being achieved ten years after the commitment was made. There are three likely causes of this lack of progress:

- a reluctance on the part of all levels of government to embrace the philosophy of “community right to know” and substitute it for one designed to limit public information and avoid the risk of litigation into the future
- the obsession with national security since ‘9/11’ has further restricted access to emergency managers to critical information because it is deemed to not meet the “need to know” principle; and
- much of the engineering and scientific information on risk is in a language heavy in obscure terminology and jargon that limits the average emergency manager and/or average citizen’s “ability to use” the information to make informed decisions.

In many areas this has led to a situation where the community has turned to social media which contains much more easily absorbed information (much of it of dubious quality) that has taken the place of well researched and properly validated information from official sources.

There are a few “green shoots” where emergency risk information at the national level is freely available from official sources such as the Bureau of Meteorology, Geoscience Australia, EMA and the Australasian Fire and Emergency Services Council (AFAC); however, locality-specific information such as the output from flood or bushfire hazard modelling and mapping, is usually closely held by local governments because of the risk of litigation. This privacy obsession extends to inhibitions to share information within, between or across levels of government.

There are few comprehensive information management infrastructures to support emergency management (see Granger, 1998 and 2000) that would meet the commitment made in COAG (2004). In part, this is because of a lack of coordination and commitment to information sharing across governments and between agencies so that effectively useless “silos of information” flourish. This is as much a cultural issue as it is a management issue. The development of a strong information culture across all levels of the emergency management sector, supported by appropriate policies and procedures that recognise emergency management as an integral part of community governance is essential if the COAG commitment is to be met.

## **Emergency Management**

The lack of recognition of emergency management as being an integral part of community governance (i.e. the mainstreaming of emergency management) is perhaps the most critical shortcoming still to be overcome. While there is legislation in each jurisdiction to administer emergency management, it does not cover the full span of the emergency management process. There are at least three major elements that can be identified, each of them covered by different parts of the bureaucracy, different legislation and different policy frameworks.

*The administrative-logistics approach*



The most widely followed approach to emergency management in Australia and internationally is that which places the process within a top-down bureaucratic framework established in legislation. This legislation generally only applies to government agencies and tends to focus on emergency management as a separate and distinct function of government. This can be interpreted as being a barrier to making emergency management part of the overall process of community governance, otherwise known as mainstreaming.

While there is clearly a need to have a well established regime of command, control, and communications to respond to emergency situations, to base emergency management planning solely on the administrative-logistics approach, where there is a risk of those administrative and logistics services breaking down early in an emerging situation, is to place the community at risk of being without an emergency management regime.

Lewis, O'Keefe and Westgate (1976) regarded the administrative-logistics approach as being "myopic, often treating the symptoms but not the causes of disaster". It has also been observed by several authors (e.g. Davies, 1995) that by itself, the administrative-logistics approach may not be appropriate in many developing countries, given the sometimes fragile nature of their administrative and logistics services. It would be capricious to base emergency management plans solely on the required response of public officials and services where those same officials and services are struggling to perform adequately under "normal" circumstances. This concern is not confined to developing countries as demonstrated in the Fukushima nuclear emergency.

This approach is also susceptible to dislocation where there is a loss of experience and corporate knowledge because of staff turnover, bureaucratic reorganisations and structural changes, a common feature in both Australia and PIC emergency management structures. This is balanced in part by the partnerships established through industry groups such as AFAC and higher level groupings such as the Australia-New Zealand Emergency Management Council (ANZEMC) and SPC.

#### *The regional planning approach*

In developed countries disaster mitigation considerations commonly form part of the urban and regional planning process. Kringgold (1974) argued that it is in the pre-disaster phase that investment of effort and resources gives the greatest returns in human and economic terms. The principal emphasis is thus on the development and implementation of land use zoning and building codes in anticipation of an emergency occurrence.

In Australia this model is well established, especially in the management of development in flood plains and in bushfire-prone areas as well as the provisions of the Building Code of Australia. It is, however, covered by its own legislative and management regimes.

#### *The sociological approach*

A sociological orientation, particularly focused on human behaviour under emergency conditions and its impact on the ability of emergency managers to evacuate communities and sustain them after a disaster, is widely followed in planning the response phase. The sociological approach is best represented by work at Ohio State University by Dynes, Quarantelli and Kreps (1972). The Ohio approach was concerned with the coordination of

community activity based on an understanding of that community's response to the various stages of a particular disaster event.

The planning and management of shelter after disaster, as practised by UN agencies, is based largely on a sociological approach. This approach is well established in Australia as part of the welfare system and in developing countries generally with support from non-government organisations such as Red Cross and Save the Children. Application of the sociological approach in PIC has grown considerably in recent decades, see for example UNDHA (1995) and Shorten and others (2003).

As with regional planning, the sociological approach is undertaken under legislation, policies and administrative structures that are separate from those established by the administrative-logistic approach.

### *Mainstreaming*

Everyone is directly involved in, and responsible for, emergency management in one way or another. The emerging paradigm of mainstreaming holds that it is not the sole responsibility of governments, but involves the utility providers, the insurance industry, the development industry, the education system, scientists, engineers, community groups and households - it involves everyone. Eburn and Dovers (2012) express this issue in the following terms:

*Emergency management has traditionally been seen as the responsibility of the emergency services, such as fire brigades and the state emergency services. Vulnerability, and the ability to protect life, property and other assets, is, however, largely defined by activities and policy settings in other sectors. This interplay of policy means that fire and emergency management should be seen as a whole-of-government and cross-sectoral issue. To mainstream emergency management is to consider how other policy sectors impact upon the community's ability to prepare for and respond to various hazards.*

This approach not only envisages emergency management being recognised and supported as an integral part of overall community governance but also that it must directly involve the community, in all its complexities, in that process.

Internationally, the term 'mainstreaming' disaster risk reduction is frequently used, including in the Hyogo Framework. In that context it refers to integrating disaster risk considerations into legislation and institutional structures, sector strategies and policies, budgets, project design, and monitoring and evaluation (ADPC, 2010).

### *The risk audit approach*

One of the key features of the risk management process described in ISO 31000 (and its predecessor editions) is the need to monitor and review the outcomes of the risk treatment to ensure continuous improvement. Very few emergency risk assessments over the past two decades do, in reality, emphasise the importance of that monitoring and review process or establish emergency risk audit as an integral part of the corporate risk audit process.

Internal audit activities are often funded to tackle only the higher risk areas of risk management, control and governance. For organisations with emergency risk management responsibilities these activities are usually classified as a high-risk area due to the unpredictable nature of disasters (as they pose a risk to the community and to the operation of the organisation

itself). It is clear, however, that the traditional internal auditor is focused on the financial aspects rather than on operational effectiveness, for example.

While the internal audit staff may not have much to offer emergency managers, the reverse is certainly not the case. Emergency management staff can often be the most cost-effective focus for monitoring business continuity planning activities, for example, as they hold the local knowledge necessary for realistic assessment and planning. It seems desirable for a close, if informal, relationship between the internal audit and disaster managers to be encouraged.

The incorporation of a risk audit function into the emergency risk management process would certainly help to institutionalise the monitoring and review process that is currently mostly absent. It is important to note that NERAG is silent on the monitoring and review or risk audit process.

## **Policy**

High level policy and strategies achieve very little unless they are implemented effectively, and information is a key element of implementation.

Linkages exist between global United Nations bodies and frameworks and national level governments, including in Australia and the PIC. This may be incorporated into policy that is agreed with States and Territories, the levels of government actually responsible for emergency management; however, very little information from the strategic level flows down to people operating at the community level.

There is huge room for improvement in engagement of Federal and State Governments with the wider community of practitioners of emergency risk management from the business, community and university sectors. The valuable lessons from risk management studies, planning processes and disaster events are often lost because information is not shared and made public. While care is essential in disseminating information to the community so as not to create confusion, panic at impacts on property values or outrage at “what might have been”, it is important to build community awareness and engagement in risk assessment and risk treatment. We have new technology that people are using in emergency threats and events. We need to harness this to share information wisely and well.

This lack of sharing of information also has impacts on use of scarce resources. “Silos of information” and lack of monitoring and evaluation mean opportunities are lost to capture experience from programs in one sector or location, scale up successes, avoid the same mistakes, and translate learnings into good practice in another sector or location. Piecemeal approaches, whether in Australia or in developing countries in the Pacific and elsewhere, lead to isolated projects which may do some good on a small, local scale, but contribute little to strategic objectives and continuous improvement.

Good governance means that key parties (including private sector emergency risk management consultants) are at the table, shared priorities are identified, roles and responsibilities are allocated and resourced, and robust monitoring and evaluation are in place. Strategies must be developed collaboratively and communicated to all players, and activities and funding aligned with those strategies. A culture of learning and information sharing needs to be built across the system.

## Conclusions

As the emergency management systems of Australia and the PIC begin the process of looking beyond the 2015 Hyogo Framework and reflect on whether the previous decade has seen a real advance in the effectiveness of the resilience doctrine, it is hoped that they do engage with as wide a span of experience and knowledge as possible. That means not just consulting another group of academics or commissioning another inquiry with constrained terms of reference, but rather to embrace ideas from the wider community, especially the private sector, where there is generally a much greater level of experience in risk management than there is in government.

Better governance, policy and information management should be at the centre of future disaster management reforms and mainstreaming, regardless of which dominant paradigm is in play. These are lessons we need to keep learning both in Australia and across the Pacific region.

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