A new emergency management for the new millennium?

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Emergency management as an international issue

It seems fitting that, at the commencement of a new millennium, an opportunity is available to reflect on developments that are shaping the social function of emergency management and the role of the emergency manager. At the same time, this opportunity enables some thought about how emergency management might develop in the near future. While thinking about future states is an important strategic exercise it is nevertheless an imprecise one: Trying to judge the future is similar to driving a car in dense fog — vague shapes are apparent, details are obscured and neither obstacles nor opportunities are precise enough to reliably act on. Moreover, while technological innovations may assist the car in its passage, these devices don't always prevent the vehicle or its occupants from coming to grief.

Nonetheless, the fact is that change in the emergency management sector is both inevitable and necessary. Natural and technological hazard impacts are continuing to trend upward in global as well as local context; and in terms of scale, frequency, and in the level of societal dislocation that is produced. Some of the hazards are well known while others are new and relatively unfamiliar. Some of the main factors contributing to the trend toward increased levels of hazard impacts, such as population growth, ageing and urbanisation, appear to continue at a relatively constant rate. Other factors, such as the utilisation of exposed high-risk regions, vulnerability of ageing urban infrastructure, environmental and climate change, may alter in a less predictable manner. In combination, these factors indicate that the task for the emergency management sector will not only be more complex but also at the same time will increasingly become central issues as communities and nations search for effective governance solutions.

What these trends illustrate is that the components of emergency management need to change from a traditional and often exclusive emergency services fraternity that is typically focused on hazard agent preparedness and response to a far wider consortium of agencies, skills and practices. The transition needs to expand the field to include areas such as sustainable hazard management, community resilience and risk management. This requires a shift from a deterministic orientation (which legitimises a focus on post-disaster actions like rescue, relief and reconstruction), to one that actively pursues full hazard assessment, identifies concomitant risks, and incorporates hazard reduction and emergency management knowledge directly into land-use management and urban development schemes, and other related policy areas.

In this respect, emergency management has embarked on its journey to the future. The past decade has witnessed a tremendous upsurge in efforts to deal with issues associated with the consequences of disaster. Two features in particular distinguish these efforts. The first is that these efforts have been international in both perspective and application. This is epitomised by the United Nations declaring the 1990s to be the 'international decade for natural disaster reduction' (IDNDR), followed in mid-2000, by an 'international strategy for disaster reduction' (ISDR—both IDNDR and ISDR are discussed in detail below). The second feature is that both the theory and practice of hazard reduction has been advanced. Significant insights have been gleaned as well as earlier thinking reinforced, in terms of how communities can be made safer and more resilient from the risks associated with natural and technological hazards.

At the end of the 1980s the United Nations directed attention to hazard awareness and risk management at international, regional, national and local levels of responsibility. It announced the period 1990–2000 to be the 'international decade for natural disaster reduction' (IDNDR), and hence to be a catalyst for global disaster reduction. The objective, encapsulated in UN Resolution 46/182 on 22 December 1989, was 'to reduce the loss of life, property damage and social and economic disruption caused by natural disasters through concerted international action, especially in developing countries'. Sharing experiences that would expand the use of practical measures for more effective disaster preparedness and management practices was specifically reinforced. To this end, all countries were encouraged to have in place, by the end of the 1990s, a series of fundamental outputs that would create a framework within which effective emergency management outcomes could be developed. In particular, the IDNDR encouraged countries to undertake:

- comprehensive assessment of risks from natural hazards, integrated into national development plans
- mitigation plans of practical measures to be applied at national and local levels - that would address long-term disaster prevention, preparedness, community awareness on a continuing basis
- ready access to warning systems by those people most at risk, at global, regional, national and local levels (Jeggle 1999, p.24).

As the IDNDR initiative moved into its last quarter, however, it was apparent that most countries did not have the critical building blocks that would permit these outputs to be achieved. In particular, Hays states that 'policy makers and stakeholders of all nations found:

- no legal or societal mandate from the citizens and stakeholders to evaluate existing research applications programs, plans, and public policies and to make major changes in the natural disaster reduction culture
- a lack of overall understanding of the complex inter-relations between the hazard, built, and policy environments of their nation
- a lack of technical capacity to conduct a national risk assessment

- a lack of technical capacity to develop improved monitoring, forecasting and warning systems
- a lack of political will to initiate a national mitigation strategy
- existing science, technology and traditional knowledge were not enough to effect these kinds of major changes in their natural disaster reduction culture' (Hays 1999, p.277).

On the face of it, these six factors might suggest that the IDNDR program was perhaps too ambitious or ill-conceived. A competing interpretation is that the sponsors of IDNDR were determined to ensure that progress be made in this important area; and that in order to do so underlying impediments needed to be brought to the surface so they could be dealt with. Whichever interpretation is correct, Hays' six points provide a useful list from which to demonstrate subsequent national developments; and they will be used in this way in later sections of this paper when a case study of New Zealand is presented.

There is little doubt that IDNDR was effective in encouraging nations to focus attention on the threat posed by natural hazards and in creating an environment wherein greater international collaboration was fostered. Nevertheless, the fundamental task of reducing societal consequences of disaster reduction remained. This shortcoming was acknowledged by the United Nations when, in October 2000, the Inter-Agency Task Force on Disaster Reduction stated that 'the legacy of IDNDR can be summarised as the promotion of an integrated, multisectoral approach to disaster reduction in the context of national development plans, rather than in the fact that the impact of disasters was reduced' (United Nations 2000, p.2). Hence, in mid-2000 the United Nations signalled its commitment to continue the task by making hazard and risk reduction a 'public value' (ISDR Secretariat 2000). To achieve this, it transposed the IDNDR Secretariat into the ISDR, the objective of which is to:

- foster multi-disciplinary and intersectional relationships to address the impacts of natural, technological and environmental hazards on modern societies
- shift activities and resource allocations from a predominant protection against hazards, to the management of risks
- integrate on-going risk prevention strategies into sustainable development plans by public, private and local community collaboration through partnership activities.

By shifting from a culture of reaction to hazards to one of risk management and prevention, ISDR aims to increase public awareness of hazards and risk issues for the reduction of disasters. In particular the aim is to motivate public administration policies and measures to reduce risk within a framework of sustainable development. An Inter-Agency Task Force on Disaster Reduction has been established comprising United Nations bodies, regional groupings and non-governmental organisations, supported by national governments.

These international efforts and advances in emergency management theory and practice establish the context to showcase New Zealand's recent endeavours in this field.

The evolution of emergency management

The fundamentals of conventional organised emergency management are now fifty years old. During that period, the practice of emergency management has changed from an essentially reactive and response-focused command-and-control civil defence approach, which grew out of the 1940s World War II and 1950s Korean War eras, to a more comprehensive and integrated approach instigated during the late 1970s. The changing hazard environment and attempts to bring practice into line during the 1970s produced the Comprehensive Emergency Management (CEM) approach, and brought forth the 'emergency manager', a specific administrator/practitioner who devoted most of his or her time to 'emergency management' (Britton 1989, 1992, 1999; Dynes 1990; Perry 1985). CEM referred to the responsibility and capability of a political component (nation, state, and local area) to manage all types of emergencies and disasters by coordinating the actions of all relevant players. The 'comprehensive' aspect includes hazard mitigation (or risk reduction), preparedness (readiness), response and recovery.

Stemming from this came the Integrated Emergency Management System (IEMS), which would help form partnerships between the different levels of resource owners, both vertically (between levels of government) and horizontally (between different agencies and the public-private sector). Basically a process model, IEMS focused attention to hazard analysis, capability assessment, emergency planning, capacity maintenance, and emergency response and recovery requirements. However, while CEM/IEMS dominated emergency management thinking for the next two decades, the practical application lagged. Even though some notable successes have occurred in bringing theory and practice together, there is still a lack of integration between hazard mitigation and emergency response.

The 1990s witnessed a different set of imperatives that started to make demands on, and necessitated a re-evaluation of, the role and direction of emergency management. Two imperatives strongly influencing political thinking in most countries are sustainable development and the heightened public demand for increased safety. In this respect, disasters have started to become a policy problem of global proportion precisely because of the growing realisation and acceptance that what humans do both in the normal course of their lives and in response to disasters frequently magnify the vulnerability of communities.

In essence, there has been widespread failure to recognise and address connections between changes in land use, settlement policies, population distributions and the accompanying degradation of habitats on the one hand, and dramatically increased levels of hazard exposure and vulnerability on the other. Hewitt summed this up well as early as 1983 when he stated that:

> the causes, nature and consequences of natural disaster depend not on conditions or behaviours peculiar to calamitous events but on the ongoing social order, its everyday relations to the habitat and the larger historical circumstances that shape or frustrate these matters (Hewitt 1983, p.25).

With this understanding starting to take root globally as well as locally, emergency management is once again transforming itself. It is moving from an operationally focused impact response activity into one that is incorporating these tasks into a more encompassing risk management framework. This broader approach places emergency management in the overall context of a community's economic and social activities. Steps taken to manage risks of extreme events can be justified to the extent that they deliver a net benefit to society. Attempts to manage risks, however, will invariably impose costs as well as benefits. Hence, the social function of emergency management is shifting from one that only minimises losses (for example, reducing loss of life or property damage), but also maximises gains (such as supporting sound investment decision-making, and general community well being).

In the process, emergency management is re-engaging with traditional partners and establishing its credentials with new associates. Perhaps the most important transforming component to emerge from the past decade is the realisation that the management of hazards and the emergencies that can stem from them cannot be achieved in isolation. To be effective, hazard and emergency management practices must be integrated into the wider regimen of practices, processes and structures of the community.

Linked to this, is the wide acceptance of the idea that emergency management requires specialised knowledge, skills and training (Mileti 1999, pp.228-9). Even a brief listing on the diversity of specialisms that emergency management looks toward illustrates why the need exists. Emergency management needs to utilise disciplines such as anthropology, climatology, demography, economics, engineering, geography, geology, law, meteorology, organisation studies, planning, political science and public policy, psychology, seismology and sociology. Professionals in these and other fields have continued to investigate how engineering projects, warning systems, land use management, planning for response and recovery, insurance, and building codes can help individuals and communities adapt to natural and technological hazards. These same groups have also assisted in reducing the resulting deaths, injuries, social and psychological costs as well as environmental and economic disruption.

This acceptance has encouraged a marked increase in activities leading to the process of professionalisation within emergency management. It has been accompanied by the formation of organisations and associations concerned with the training of and awarding of credentials to emergency management specialists, the development of specialised publications, and the spread of professional meetings and training (Mileti 1999).

From emergency to management

Another emerging characteristic is the shift from role specificity to a wider collection of tasks that brings together many roles. Today's emergency managers are being called upon to tackle problems they have never before confronted, such as understanding complex physical and social systems, conducting sophisticated cost-benefit analyses, and offering long-term solutions (Mileti 1999, p.13). With this as the new reality, there is a growing awareness that the term 'emergency manager' is perhaps less a specific position than a collection of positions encompassing areas as diverse as city governance, community development, emergency response, insurance, land-use management, legislation, urban development, and urban planning.

A key factor in this new thinking is the concentration on the 'management' component rather than the 'emergency'. This has widened the focus of emergency management from being highly task-specific (that is planning and responding to particular categories of events by engaging dedicated skilled personnel and resources) to a more generic social function looking at mass emergency and disaster from a holistic perspective. This, in turn, directs attention to integration as a central concept.

A sustainable community also selects hazard reduction and management strategies that evolve from full participation among all public and private stakeholders.

In this context, management relates to relationships (people as well as organisations), resources (how one's own as well as the wider community resources are utilised), and the environment (sustainable development as well as hazard suppression), regardless of whether a hazard threatens or has impacted. This approach is broadening out the domain of emergency management, and while the specific context—to deal with disruptions of entire communities by a natural or technological hazard-has its own characteristics and will always be needed, the approach is changing. The change in emphasis has introduced new dimensions requiring a wider range of practices and processes than any single occupational group can master. It reflects the broadening of emergency management's mandate from response to include reduction, from hazard profiling to include a complimentary understanding of community attributes, and from impact event to include the impact consequences.

None of these developments, however, imply that the destruction and suffering imposed by disasters will be easily eliminated.

There will always be the need for plans to address these aspects of reality. The real issue is to bring disaster response planning and operations into a more holistic policy and practice framework. Sustainable hazard management, at this point in time at least, appears the most appropriate vehicle to achieve this.

Creating community sustainability and resilience

A prime initiative for greater connections to be made between hazard mitigation, emergency management and sustainable development is the work of Mileti and his associates (see for example, Mileti 1997, 1999a, 1999b, 1999c; Beavers and Mileti 2000). In this context sustainable and resilient communities can be defined as societies which are structurally organised to avoid or minimise the effects of disasters, and, at the same time, have the ability to recover quickly by restoring the socio-economic vitality of the community (Tobin 1999, p.13):

To achieve sustainability, communities must take responsibility for choosing where and how development proceeds. Towards that end, each locality evaluates its environmental resources and hazards, chooses future losses that it is willing to bear, and ensures that development and other community actions and polices adhere to those goals.

A sustainable community also selects hazard reduction and management strategies that evolve from full participation among all public and private stakeholders (Mileti 1999a, p.4).

Planning is probably the most comprehensive means of creating sustainability and resilience. Sustainable development is the result of an integral planning process that incorporates (or should incorporate) a number of considerations regarding hazards such as vulnerability and risk reduction, strategies aimed at protecting the environment, and economic growth. Hence, implementing hazard mitigation policies is a major vehicle, although it is not the only means, and neither will it work in all cases. It is not a comprehensive plan per se that is needed, but rather a comprehensive policy that will be the most successful.

Such a policy would incorporate elements of land use management, construction regulations and perhaps financial inducements or sanctions. Whatever the specific components might be, and these will vary from country to country, two essential inter-linked components are strategies to promote cooperation among all stakeholders and a whole-of-government approach.

Mileti suggests a series of objectives that need to be simultaneously achieved if hazards can be managed in a sustainable way:

- *Maintain and enhance environmental quality:* human activities to mitigate hazards should not reduce the carrying capacity of the ecosystem, for doing so increases the losses from hazards in the longer term.
- *Maintain and enhance people's quality of life:* a population's quality of life includes, among other factors, access to income, education, health care, housing and employment, as well as protection from disaster. To become sustainable, local communities must consciously define the quality of life they want and select only those mitigation strategies that do not detract from any aspect of that vision.
- *Foster local resilience and responsibility:* resilience to disasters means a locality can withstand an extreme natural event with a tolerable level of losses. It takes mitigation actions consistent with achieving that level of protection.
- *Recognise that vibrant local communities are essential:* communities should take mitigation actions that foster a strong local economy rather than detract from one.
- *Ensure inter- and intra-generational equity:* a sustainable community selects mitigation activities that reduce hazards across all ethnic, racial and income groups and between genders equally, now and in the future. The costs of today's advances are not shifted onto later generations or less powerful groups.
- *Adopt local consensus building:* a sustainable community selects mitigation strategies that evolve from full participation among all public and private stakeholders. The participatory process itself may be as important as the outcome (Mileti 1999a, pp.5-6).

Mileti also suggests that within the sustainability context, a good comprehensive hazard management planning framework would contain the following:

- *Hazard identification:* magnitude, location, and probability of a disaster
- *Impact assessment:* what populations and properties are exposed to hazards, and the likely damage in a disaster
- *Loss estimation:* the quantitative probability of damage, injuries, and cost in a given area over a specified period of time
- *Carrying-capacity assessment:* the maximum load (population x per capita impact) that can safely and persistently be imposed on the local environment by society without reducing the ability of the environment to support such a community in the future
- *Built-out analysis:* the maximum level for the buildings and infrastructure given the character of the local social and environmental systems
- *Ecological footprint analysis:* an estimate of the land and water area needed to support local consumption and development practices
- *Assessment of sustainability indicators:* many communities have identified indicators such as education, the economy, public safety, the natural environment, health, the social environment, politics, culture, and mobility
- *Environmental impact statement:* such a statement should always include an analysis of natural hazards (Mileti 1999a, p.156)

How these components might be implemented, how their effectiveness evaluated, and if lists such as these are sufficiently comprehensive, has yet to be determined. This is the task ahead and where emphasis is now starting to be placed. As these initiatives take hold, emergency management will be pulled further—and faster—along an evolutionary path, and will be pushed further—and faster—from its response-only origin.

Drivers for change

Emergency management is invariably influenced by broader social change. Six key drivers that are altering the ways in which individuals as well as institutions frame perspectives and subsequent action can be identified (see *table 1, overleaf*). These drivers will help to embed emergency management into the everyday decision-making within communities.

The drivers present a framework within which emergency management can operate (*Figure 1*). Here, the overall aim of emergency management is to enable communities to maximise gains (through sustainable hazard management) and minimise losses (through effective risk reduction, response and recovery programs).

The drivers for these actions are sustainability and resilience; holistic, integrated management; governance and partnerships; and economic efficiency. Both central and local governments as well as the private and non-governmental sectors have roles to play—but they need to be coordinated.

To achieve the wider aim, a community's social and economic goals need to be articulated. This is a prerequisite for any strategic planning so that, through a risk management process (depicted in *Figure 2, overleaf*), community choices can be made about levels of risk commensurate to the wider goals of the community.

Tensions will exist between different drivers, and should be expected. For instance, at times decisions promoting intra- and inter-generational equity, may not always be economically efficient, and vice versa.

This does not mean that the drivers themselves are flawed. Rather, they provide

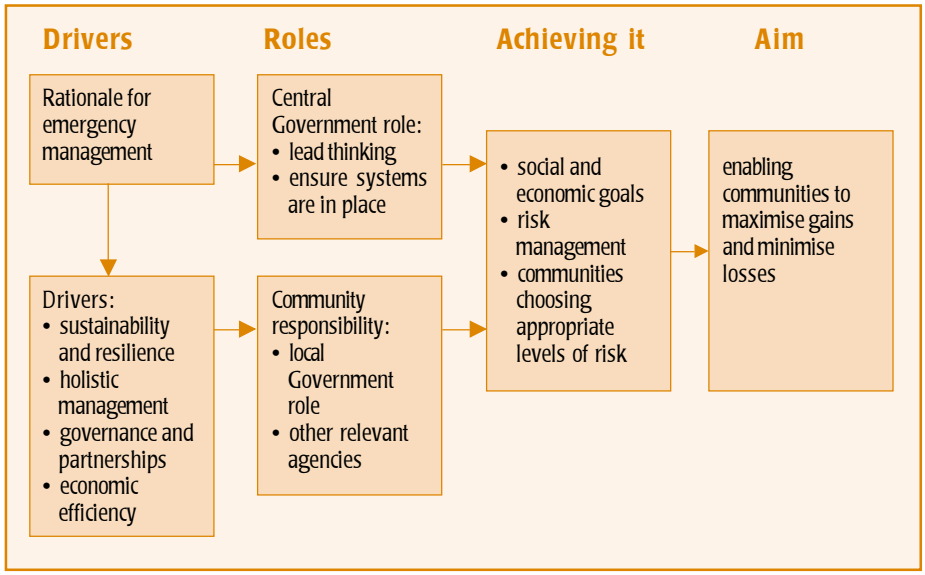

Figure 1: Emergency management drivers.

Sustainability	Since the release of the Brundtland Report in 1987, sustainable development has become an entrenched concept within most developed countries. In the emergency management context a sustainable approach should ensure that decisions about economic and social development do not inadvertently increase the risks from social harms to current or future generations. This does not mean that risk exposure in some instances will not increase. However, where it does, it should only be through explicit consideration.
Resilience	Resilience concerns the ability of systems to absorb change and to either bounce back, or to shift to new points of stability. For emergency management this means focusing more effort on reducing the vulnerability of a community to 'extraordinary' events. It also requires more emphasis on planning for, and undertaking, post-event recovery in order to make communities less vulnerable to future events. The key to effective community resilience lies within broader economic and social policies.
Integrated management	Both concepts above underpin the need for holistic decision-making. This means embedding emergency management thinking within all decision-making affecting the wider social and economic goals of communities, so that emergency management becomes an integral part of achieving the goals (rather than an obstacle or as is often the case, an unknown). Equally important is that reducing a community's vulnerability to one hazard should not inadvertently increase its vulnerability elsewhere
Governance	Many everyday decisions add to or lessen the vulnerability of communities. These decisions are often made within the public domain or, at least, are influenced by decisions made within the public domain. To be successful, emergency management must be accepted as a core part of governance within public institutions and, wherever possible, private institutions as well. Consistent with a risk management approach, decisions should be made following wide consultation and the establishing of a clear mandate, and by representatives at all levels of government. Importantly, national aspects of emergency management should be dealt with in a way that allows decisions affecting individual communities to be made locally. This ownership of decisions should lead to better outcomes by being pragmatic and by being understood by those affected, and thereby strengthening a community's resolve about them.
Partnerships	Emergency management cuts across all sorts of activities both nationally and locally. Effective partnerships must be created and maintained horizontally (between government, private sector interests and community groups), and vertically (between different levels of government, and private and voluntary sector organisations). The linkages and relationships that are required throughout the wider community to achieve effective emergency management are significant. However, many emergency management agencies have difficulty in gaining acceptance among other agencies that are influential in the adoption of a risk-based approach to disaster management. This is primarily due to the continuing misconception, by both the public and other agencies, that emergency management is solely about preparing for and responding to events. It is therefore important that wider interests are signalled, and that those working in the field of emergency management strengthen and unify existing partnerships, as well as forge new ones.
Economic Efficiency	It almost goes without saying that any public policy developed nowadays must be economically efficient; this prerequisite will not diminish with time. For emergency management this requires consideration of many issues including transaction costs, incentives for appropriate behaviour, moral hazard issues, and least-cost policy tools. Paying for effective risk-based emergency management programs will require governments to tighten up on some disaster practices that are inconsistent with other policy decisions.

Table 1: Drivers for emergency management. Source: Ministry for Emergency Management (1999a).

Type	Location	Exposed population
Floods	Most inhabited areas	2.6 million
Volcanoes	Auckland area and central North Island	2.2 million
Earthquakes	Central areas of New Zealand	2 million

NB. Total population in 2000 is 3.8 million
Source: Tephra (1994) 13(1) May p.10 (revised - Britton, 1998)

Table 2: Principal natural hazards in New Zealand.

contexts within which trade-offs can be made that, as far as possible, balance the meeting of different needs and expectations within society as a whole.

The challenge still remains for the development of practical mechanisms to implement these drivers. If it becomes a routine function, emergency management can assist communities to achieve wider goals.

Making progress: a New Zealand case study

Engaging these drivers to enable emergency management to keep pace with wider social change and consolidate its utility will require significant groundwork. Hays (1999) work, cited earlier, reminds us that developing critical building blocks is an essential prerequisite if substantial progress is to be made in national natural disaster reduction programs. The six prerequisites Hays identified can be grouped into four generic areas:

- creating a mandate for change
- emergency and hazard management as politically salient issues
- developing appropriate levels of understanding
- creating the necessary technical capacity.

Using these four areas as guides, we now turn to illustrate how New Zealand is underpinning its own emergency management reform by addressing these fundamentals.

Creating a mandate for change

While the potential for large-scale natural hazard impact in New Zealand is readily

apparent (see for example, *Table 2*), and a number of hazard incidents provide constant reminders (*Table 3*), the nation has been fortunate in not having a major natural disaster since the 1931 Napier earthquake. Not surprisingly, the New Zealand population became accustomed to the idea that the emergency system and attendant practices and processes, largely untouched for decades, were nevertheless satisfactory. The prevailing attitude amongst citizens, practitioners and politicians was 'if it ain't broke then why fix it?'

Events elsewhere, and in particular the 1989 Loma Prieta earthquake in California (in which a combined local and central government emergency management team visited shortly after impact), started to jolt this complacency. The early and mid-1990s produced a number of reviews, reports and workshops that highlighted a series of issues that began to question the effectiveness of New Zealand's emergency management practice. For instance, a Law Commission Report (1991) identified changes needed in executive powers that were necessary to deal effectively with a national emergency. The Law Commission also indicated that a review of the current legislation would be appropriate. In like manner, in 1991 a major study of how utility lifelines would perform following a maximum credible earthquake in the Wellington region, the first of its type in New Zealand, revealed a series of significant vulnerabilities that had not hitherto been considered (CAE 1991).

In similar fashion, a 1992 review of civil defence practices linked social and economic changes and public sector reform that had occurred since the

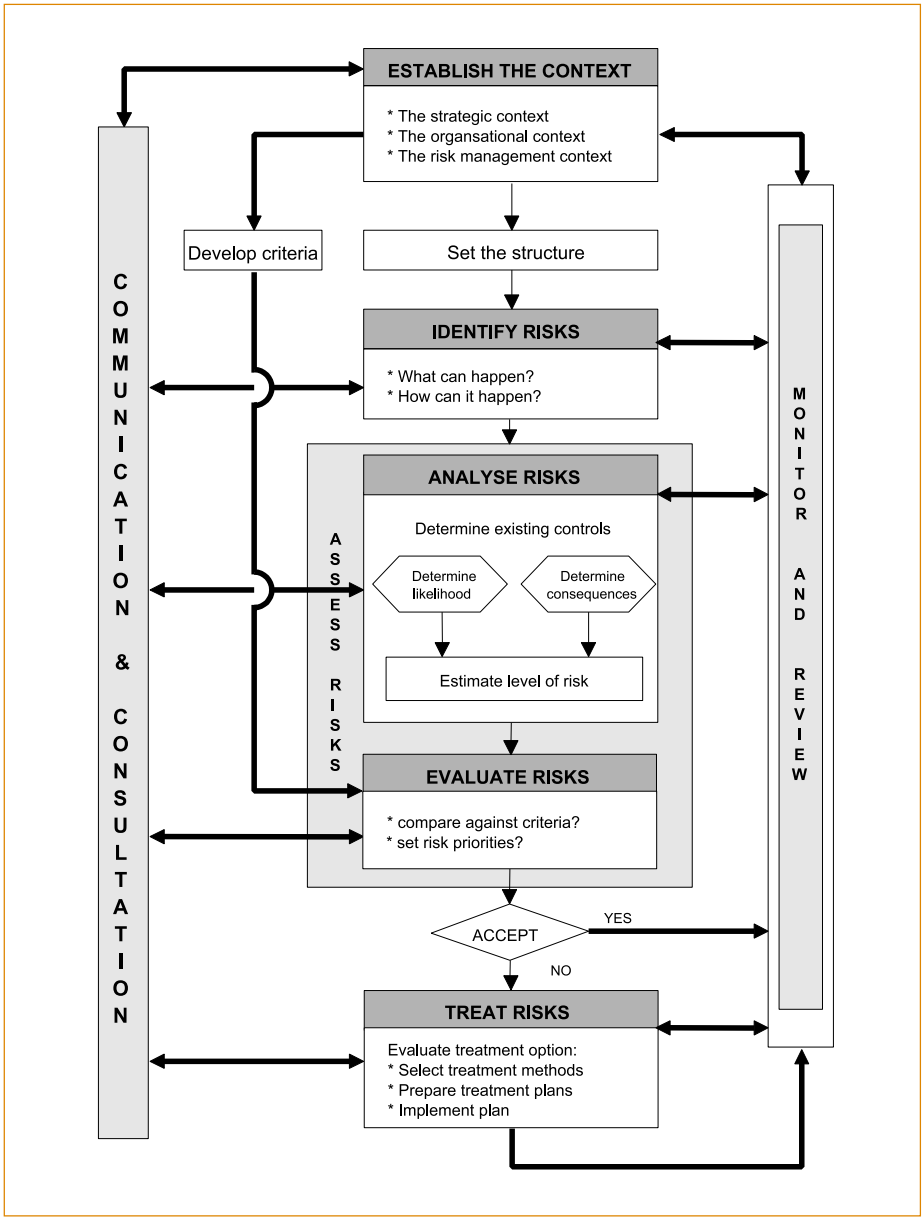

Figure 2: The risk management process. *Source: Standards Australia. (1999) Risk Management Standard. AS/NZS 4360:1999 2nd Edition. Joint Australian/New Zealand Standard prepared by the Joint Technical Committee OB/. Strathfield, NSW: Standards Association of Australia.*

Event	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Alerts	-	-	-	4	-	-	-	-	-	-
Heavy rain warnings	63	112	74	75	94	89	84	117	123	99
Snow warnings	-	35	8	12	16	25	16	5	16	5
Strong wind warnings	4	22	14	18	8	22	32	50	22	16
Tornadoes/cyclones	4	1	-	-	1	2	1	4	1	-
Felt earthquakes	42	47	73	50	46	63	69	82	106	172
Tsunami bulletins	9	12	13	16	41	32	22	14	15	11
Floods (non-declared)	-	4	1	2	8	2	-	11	1	4
Volcanic incidents	-	1	-	1	4	6	9	8	12	11
Other incidents	1	2	3	-	-	3	1	1	2	-
Total	**169**	**243**	**201**	**194**	**221**	**259**	**251**	**309**	**316**	**327**
Declared emergencies	3	1	1	9	3	3	3	6	7	

Table 3: Natural Hazard Incidents—1991 to 2000 (up to 21 November 2000). Year from 1 July to 30 June Source: National Operations statistics, Ministry for Emergency Management

passing of the Civil Defence Act 1983 with the nation's capacity to respond to a national natural disaster. This review found that the wider reforms had 'dislocated much of the current Act from modern realities' (Civil Defence Review Panel 1992), and concluded that existing structures would not cope in a major civil emergency.

Two years later, the lessons of the 1994 earthquake in Northridge, California, were explored in two Wellington conferences. The first, organised in May 1994 by Wellington City Council and the New Zealand Fire Service, brought key Los Angeles emergency managers to Wellington: their experiences quickly revealed many weaknesses inherent in the local system. The second meeting, organised by the Wellington Earthquake Lifelines Group in November 1994, illustrated among other things a greater need to concentrate on developing coordination between the utilities and the emergency services (WeLG 1994).

By this time, the consistency of messages was starting to take effect. In late 1994, the Minister of Internal Affairs invited twenty-six emergency-relevant organisations to attend a workshop and explore issues pertaining to the current performance of the emergency services sector and to generate ideas on how this could be improved in both the short and long terms.

The workshop proposed to Government that a comprehensive review of emergency services be undertaken. Subsequently, in April 1995 Cabinet appointed a five-member Task Force to undertake a Review of Emergency Services (1995). The terms of reference, however, identified preparation and first response capability as the priority of the review. This was tempered to a degree when the Minister of Finance commissioned a Review of Disaster Recovery Preparedness (1996 1997) with particular reference to issues pertaining to the private sector.

Through its deliberations, the Emergency Services Review Task Force confirmed the existence of a consensus on the need for change. Three factors in particular were identified that focused this need:

- there were unrealistically high public expectations of assistance that could be provided in an emergency
- there was a reduced capacity of central and local government to respond following public sector reform
- there was a need to improve the ability of the emergency services sector to adapt to changing circumstances, learn from overseas experience, and to better coordinate resources.

The task force recommended to Government a new structure comprising a Ministry with policy, purchase and audit functions and an operational structure to deal with emergency response that would integrate local and central government emergency service providers.

The task force also recommended that the nation's emergency management system should be more comprehensive in outlook and approach, rather than maintaining an avowedly response-focused orientation. It also suggested that the sector needed to move quicker and farther in areas of professional development; and it reinforced the established practice that accountability for declarations of emergency should remain the task of elected officials at the most appropriate level of government. These recommendations were endorsed and extended by an Officials Committee that was established to comment on the report.

One of the aims of emergency management reform in New Zealand is to link this area with other community values and make it part of a community's overall strategic approach to the future.

The findings of the task force, and its recommendation for a new approach to emergency management were reported in local and national media. Workshops for key sectors (including local government, emergency services, the voluntary sector, the research community and professional associations) were held in Wellington during late 1996. Once Government agreed in principle to the recommendations, a series of eighteen workshops was held throughout the country in 1997 to explain and explore with stakeholders how a proposed new emergency management system might function.

Once a new Ministry had been created in 1999 to carry the reforms forward, and prior to the advent of a Bill being introduced into Parliament to replace the current legislation, another series of workshops were held throughout the country in late 2000. The focus this time was providing information and guidance about proposed new practices, processes and structures.

The need for change has been generally accepted and several stakeholder groups are moving ahead of the legislation (which was introduced into Parliament in November 2000) to re-configure practices, processes and structures. In particular, the vision of emergency management being able to assist communities achieve wider goals has been embraced. Here, the risk management approach recommended by Standards Australia and Standards New Zealand has proved to be an invaluable guide.

Emergency and hazard management as politically salient issues

One of the aims of emergency management reform in New Zealand is to link this area with other community values and make it part of a community's overall strategic approach to the future. The reform aims to tie emergency management to community decisions about growth, development, and long-term sustainability. In essence, the New Zealand approach is to make emergency management an integral part of management and governance systems (MEM 1999a; 1999d).

A significant step along this road was reached in 1997 when both Central Government and local governments formally acknowledged emergency management to be a core function of their respective governance systems. In the case of Central Government it also re-defined its responsibility to that of establishing the emergency management framework and identifying the principles, roles and responsibilities of all agencies in the sector.

The cornerstone of the new emergency management framework is a set of principles that are fundamental guides to policy actions:

- emergency management to be comprehensive and integrated
- emergency management must focus on the consequences of all hazards
- emergency management must be supported by appropriate information, expertise and structures
- emergency management must provide for consequences that are beyond the capacity of people and communities
- emergency management requires a

systematic approach (including risk management)
- emergency management requires community participation.

The means for institutionalising these principles are the basis for the proposed new legislation and a national strategy for emergency management. The Bill, intended to repeal the existing Act, provides for planning and preparation for emergencies, as well as for response and recovery in the event of an emergency. A general policy statement contained within the Bill asserts its intention is to improve and promote 'the sustainable management of hazards in a way that contributes to the well-being and safety of the public and property'. In particular, the Bill is designed to:

- ensure New Zealand has the appropriate structures and expertise to manage disasters at the local and national level
- ensure New Zealand implements a risk management approach to hazards across the board
- ensure New Zealand communities actively seek to reduce the risks they are exposed to as well as being prepared to respond effectively to events when they happen
- provide the framework for greater cooperation and coordination of emergency management amongst local government, national government and emergency services
- reduce the risk of adverse economic and social impacts from emergencies (New Zealand Government 2000, p.1).

Apart from establishing new structures and roles, the Bill has the capacity to influence land-use planning and infrastructure management, two aspects identified elsewhere as being critical to effective hazard and emergency management (May et al. 1996; Britton 1993; Britton and Clark 1999a, 1999b). The Bill also requires the development, via a consultative process, of a national strategy, which will provide overall strategic direction for emergency management. Centred upon the concept of resiliency, the national strategy is designed to:

- identify national interests and priorities for sustainable hazard management to guide decision-making both nationally and locally
- assist in the clarification and coordination of roles, responsibilities, and expectations or people, businesses, communities and public agencies
- outline targets, actions and themes at aligning policy development and ensuring efficient, effective and coordinated program implementation.

Since the scientific literature is replete with examples and explanations about why emergency management has low salience among public officials and the general public, and is a major impediment to effective policy making, the across-the-board commitment to the initiatives described above in New Zealand is particularly pleasing. This is even more the case when these reforms, are taking place without a major natural disaster. This factor alone underscores the relatively high salience that emergency management is achieving in the country. Moreover, the absence of a major precipitating event has allowed New Zealand to develop a system that has not been sidetracked by the urgency imposed by any specific disaster event.

Developing appropriate levels of understanding

Developing a level of understanding about hazards, the associated risk and their management that is sufficient to make substantial progress is not an easy task. A lot of 'unlearning' has to occur at every level of society, and for this to occur there has to be commitment. If commitment exists for solving the problem, many hazard and emergency management issues can be addressed within existing tools and information. After all, as Mileti reminds us, disaster-resilient communities are built with the same building blocks that create resiliency to other social and environmental problems. However:

> until people are ready to address the inter-dependent root causes of disasters and to do the difficult work of coming to negotiated consensus about which losses are acceptable, which are unacceptable, and what type of action to take, communities will continue a path toward ever-larger natural disasters (Mileti 1999a, p.64).

Part of the unlearning process requires people to be comfortable with shifting from 'disasters as acts of god' to 'disasters as acts of human intervention' (Britton 1986; Quarantelli 1998). If, and when this can be overcome, Perry and Lindell remind us that developing effective hazard management programs is dependent upon adequate awareness of a series of inter-related issues:

> To develop a natural hazards mitigation program, both citizens and officials of a community need to be aware that hazards exist and believe that a risk of significant negative consequences is posed. At the same time, officials need to believe that there are effective ways for coping with the hazards. In addition, the policy programs being suggested must be politically feasible to implement, which means that they are compatible with community values (Perry and Lindell 1982, p.30).

In both areas closer linkages between the practitioner and researcher, as well as between different research disciplines will substantially aid the re-learning process. The need for continued inter-disciplinary and crosscutting partnership building at all levels among scientific and social organisations, government, and the private sector is paramount.

Taking New Zealand as an example (although the issue is by no means unique to this country—see Haimes 1999; Irwin 1995), there are significant gaps between research and practice as well as between different areas of specialist disciplines. Both areas are creating barriers to greater development and application. Acknowledging this, the Ministry for Emergency Management is undertaking a strategy for research designed to meet Government's goals for emergency management, and that also fits with general policies and practices in the nation's research sector (MEM 2000a).

The research strategy seeks to gain agreement from relevant research providers to create a vision for research on emergency management; to establish a set of principles for research relevant to the field, and to identify key tasks needed to implement the vision and principles. This is necessary because, in effect, Government reforms in emergency management have identified gaps in relevant research programs. In particular, there is a:

- lack of comprehensive coverage of research on all aspects relevant to risk-based emergency management, for instance, disciplines such as earth sciences and engineering tend to receive a strong focus, while behavioural sciences, public policy and related areas receive less attention
- insufficient 'national perspective' on hazards, risks and consequences, making it difficult for policy-makers to gauge the risks the nation is subject to, or to measure progress on the management of those risks
- insufficient linkages between different 'emergency management' research sectors—for instance between those involved in research on economic effects, and those involved in research on physical processes

- research is not always focused on application for communities or practical use:
  - decisions on research not driven by end-users
  - presentation of research not user-friendly
  - research does not always reach the appropriate end-users (MEM 1999b, p.8).

The Ministry is currently working with providers and users of emergency management research to identify research (and the capability to do research) in place, and where there are gaps.

A key component of this is the adoption of risk management (Joint Technical Committee 1999; MEM 1999b). A broad approach to risk management places emergency management in the overall context of a community's economic and social activities (Mattingly 1999). The risk management approach is increasingly being seen as a process in which the public at large in New Zealand openly evaluates risk reduction. The logical long-term outcome of this new approach will be the development of communities that are more disaster resistant.

Creating the necessary technical capacity

Emergency management is a coordination task, not a directive one. Skills and expertise, resources, and political authority have to be brought together to assure effective hazard mitigation, disaster response and appropriate recovery so as to achieve sustainable hazard management and community resilience. These programs need to be negotiated rather than mandated; and in this context hierarchical relationships need to be based on interpersonal reciprocity if they are going to be effective.

This approach is particularly important for emergency management since there is no one agency with the requisite technical and administrative expertise to perform all the needed functions. While there is some organisational overlap (and some gaps), emergency management involves response agencies; scientific and technical agencies; regulatory and mitigation agencies; education agencies; support agencies; coordination agencies; and responsible personnel from both private and public sectors. A major challenge for emergency managers is to provide sufficient coordination of involved agencies so that the responsible officials can make the necessary decisions across the CEM/IEMS spectrum.

New Zealand is well served by a range of statutes that have managing the effects of hazards (and managing specialist emergency events) built-in, notably in the resource management, building, biosecurity, new organisms and hazardous substances areas. These statutes have a similar style, in terms of their purpose and policy development (planning) processes, in that they:

- have sustainable management (of the environment, and/or the health and safety, and economic and social well-being of people) as part of their general purposes
- aim at avoiding, mitigating and remedying adverse effects of activities (land-uses, hazardous substances storage, etc.) simply through performance standards rather than prescribing exact means of doing so (MEM 1999b).

Integrated pre-disaster planning for post-event recovery is a relatively new concept that has the potential to help communities reduce hazard threats, to recover quicker, and achieve greater resilience from undesired disruption.

This suite also establishes holistic policy development methodologies (are cross-media, territory-wide, and cover all industries and like activities), require justification of policies and methods of implementation (they must consider alternatives, assess benefits and costs), and link costs (of administration activities and service delivery) to beneficiaries or exacerbators (such as polluters) by equitable and efficient means. Other legislation has similar useful requirements. For example, core local government legislation (covering the provision of public works and community services associated with risk reduction and preparedness) requires local authorities to rigorously evaluate what works and services to deliver, and how best to deliver them.

While the above points offer positive opportunities for emergency management, some issues do exist. Better information gathering and analysis methodologies, and a higher and more diversified skill levels available to core agencies are two areas in particular that have been identified that require prompt attention.

To achieve these ends, the Ministry is leading efforts to better coordinate and integrate the strategies, policies and programs of relevant public and private agencies. One example is a strategy to enhance professional development across local government and emergency services. Specifically, the strategy aims to identify what knowledge, skills and behaviours are required of emergency management practitioners; to formalise and align education and training standards and qualifications; and to improve the inter-agency cooperation in the delivery of relevant programs (MEM 1999b; 2000b). The standardised programs are being developed, to NZ Qualifications Framework requirements where applicable, in cooperation with a number of tertiary educational providers.

Consistent with its role of establishing and maintaining the emergency management framework for New Zealand, central government also approved a model for the delivery of emergency management at the local level.

The model has been developed in conjunction with local government to ensure that it has practical application and is flexible enough to be implemented in a wide number of contexts. The model comprises consortia of existing local authorities, working with emergency services, utilities and other relevant resource holders to oversee risk-based emergency management for their area. Publications providing information to the consortia for planning arrangements (MEM 2000c) and the formation of appropriate structures (MEM 2000d) have been prepared by the Ministry, with others for utilities and the health services underway.

More specialised information is also being prepared on the roles of agencies and statutory processes for managing specific hazards in a wider context, for example flooding as part of 'whole of catchment' river management (MEM 2000e).

Linked to these initiatives is a monitoring and evaluation strategy. While still in the development stage, the strategy will underpin a range of work, for example, to develop social and economic indicators to provide insights into community resilience;

and assist in the identification of 'best practice' approaches among agencies.

All these strategies and work programs are aimed at helping key stakeholders identify, understand and perform their roles for creating community sustainability and resilience.

By institutionalising best practice approaches and providing relevant education and training programs, the overall capacity of the emergency management sector will be increased. A key emphasis throughout is on coordination. To this end, two key functions of the Ministry are facilitation (by developing frameworks and programs) and brokering (bringing key personnel together and negotiating roles). Creating opportunities to link person-to-person; specialist-to-specialist; agency-to-agency; and sector-to-sector is perhaps the most important role of the Ministry.

Conclusion

Integrated pre-disaster planning for post-event recovery is a relatively new concept that has the potential to help communities reduce hazard threats, to recover quicker, and achieve greater resilience from undesired disruption. It does, however require further development.

The successful utilisation of this concept requires a complete shift from the deterministic act-of-god perception to one in which communities take full responsibility for the implications of their planning decisions. Adopting land-use management practices that are in harmony with the physical locality which at the same time meet the expectations and desires of communities are fundamental prerequisites.

The need to be more forward thinking by developing policy instruments that can institutionalise hazard management and motivate communities to achieve greater robustness are also required. New organisational relationships and new ways of bringing together different technical skills also become both necessary and possible, as the functions of hazard reduction and emergency management are recognised as being multi-dimensional, involving many skills and abilities.

The evidence is now abundantly clear that natural and technological disasters are not problems that can be solved in isolation: 'Losses from hazards result from short-sighted and narrow conceptions of the relationships of humans to the natural environment' (Beavers, Mileti and Peek 2000, p.65). With this understanding, emergency management practice is beginning to re-invent itself to deliver services that will best meet the needs of communities.

This is not an easy task. Emergency management exists within a complex political, economic and social environment. Designing and implementing relevant practices and processes is easier said than done. While the reasons are myriad, three longstanding obstacles have been the low salience of disaster issues; the vertical and horizontal fragmentation of governance systems (and in particular the relative lack of adequate linkages between public and private sectors one the one hand, and the research and practitioner communities on the other); and the technical problems in identifying hazards, defining risk, designing and implementing mitigation programs, as well as preparing for, responding to and recovering from impacts.

These issues are now being tackled with more determination than they have been in the past. Helping this is the recognition that community expectations are changing. There is more expectation of public participation and more need for consensus-building regarding hazards and risk reduction. However, this recognition comes at a time when there are fewer resources available to support broadly focused and potentially expensive programs that may or may not be needed in the (political) lifetime of decision-makers.

The fact that emergency management is an issue necessitating an integrative approach is also becoming more widely understood. Petak has suggested that effective emergency management practice require governance systems to possess four interlocking mechanisms.

They are the capability to understand the total system, the uses to which the products of the efforts of various professionals will be put, the potential linkages between the activities of various professional specialists, and the specifications for output and language which are compatible with the needs and understanding of others within the total system (Petak 1985, p.6). These four elements are the basic organising principles of the emerging emergency management framework that is emerging out of the twentieth century.

While these developments do not mean that our communities are adequately prepared to deal with disasters, there is nevertheless cause for optimism as this new framework is slowly being put in place. Emergency management is starting to become a politically salient issue before impact occurs. This is a major turnaround and suggests that decision-makers are beginning to regard emergency management as they would many other major social issues.

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