

# Creating a Resilient New Zealand

Can public education and community development campaigns create prepared communities?

An examination of preparedness motivation strategies.

**Kirsten Finnis, University of Otago**



Commissioned by the Ministry of Civil Defence & Emergency Management  
September 2004

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**Ministry of Civil Defence  
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## **Foreword**

The National Civil Defence Emergency Management Strategy sets out four broad spheres of activity to build the Crown's vision of Resilient New Zealand. These goals reflect the principles and arrangements of the Civil Defence Act 2002 and reflect the Crown's priorities for civil defence emergency management in New Zealand.

The underpinning driver for civil defence emergency management in New Zealand is that of the creation of resilient communities. The goal is for communities that are aware of the hazards we face, and who take measures to protect themselves, their families and their livelihoods.

While a number of measures have been undertaken at local, regional and national level to increase community awareness and preparedness for disasters, it is acknowledged that a great deal more can be done to create capacity in communities so they are better prepared to deal with disasters when they occur.

Firstly we need to ensure that all communities are aware of the hazards that could impact on them. But creating awareness alone is not enough. We need to convert that awareness to action, where individuals and communities take adequate steps to reduce the impact of the hazard before it occurs and who are empowered to respond effectively during a disaster and recover quickly.

As a first step towards understanding the complex psychosocial issues around converting awareness to action, the Ministry has commissioned this study which entails an extensive review of research investigating preparedness, to find out what influences people's preparedness, as well as a review of local and international public education and community development programmes to examine what is being done in other sectors to influence preparedness or behaviour change.

The author presents an objective perspective on strategies that appear to be working and offers some useful guidelines for how CDEM education and community programmes in New Zealand could be conceived, constructed and conducted to achieve a beneficial increase in community preparedness.

John Norton

Director, Ministry of Civil Defence & Emergency Management

## **Author's Introduction**

The overall aim of this paper is to investigate ways to make New Zealand communities more resilient to hazard events. Resiliency, in this case, is the ability of people and communities to return to prior levels of functioning following an event. Therefore, to begin the recovery process after a disaster or extreme hazard event, individuals and communities must have the resources to look after themselves before help can arrive. Preparedness is the key to resiliency. However, New Zealanders at present are somewhat disinclined to prepare for Civil Defence emergencies despite their general knowledge (awareness) of the hazards and risk, and potential disruption to everyday life. This awareness needs to be turned into action. To develop the best possible approach to achieve this, understanding of the psychology of preparedness must be ascertained and the range of preparedness motivation strategies examined.

The first step in the study therefore was to undertake an extensive review of hazard preparedness literature, including some psychology material, to get some idea of why people are disinclined to prepare and identify the traits or characteristics that may predict preparedness of an individual or household. A search for studies or reports examining the effectiveness of public education campaigns and behaviour change strategies was then carried out. During this search it was found that certain studies looked at the effectiveness of specific material content, whereas others examined the whole campaign, so both were reported on. 'Public education' was also found to fall into four categories; 1) Public education (where the campaign consisted mostly of providing the public with information via various media), 2) Social Marketing, 3) Community Development Programmes and 4) Psychological Preparedness. Although there is a plethora of information on campaigns that are out there, the effectiveness of these campaigns was found to be poorly reported. For this report it was essential that effectiveness be examined. From the campaigns that have reported their effectiveness, it was those that related closely to civil defence issues or the highly effective campaigns that were examined in this study. The final part of the study was then to bring the findings from each section together, with recommendations being made on how an effective programme could be undertaken.

A peer review group comprised of experienced researchers and academics working in the field supported this research, adding valuable insight into their specific fields. The members of the group were David Johnston – Hazard Scientist (GNS), Douglas

Paton – Psychologist (University of Tasmania), Kevin Ronan – Psychologist (Massey University) and John McClure – Psychologist (Victoria University of Wellington).

This report will hopefully give readers a better understanding of preparedness issues as well as an insight into how to foster resilient individuals and communities through effective preparedness motivation strategies.

I would like to thank the contacts at the New Zealand Fire Service, Earthquake Commission, Land Transport Safety Authority, BMR Research and the Health Sponsorship Council for their time and the information they provided. I would also especially like to thank the staff at the Ministry of Civil Defence & Emergency Management for all their help and support while researching this report.

Kirsten Finnis, University of Otago, July 2004.

## Introduction

This study has set out to determine how best to go about getting the public to be aware of, take action in regard to, and prepare for hazard events. Such behaviour will help support the creation of more resilient communities by increasing individual and community ability to plan for and recover from hazard events. The study entails an extensive review of research investigating preparedness, to find out what influences people's preparedness, as well as a review of local and international public education and community development programmes to examine what is being done in other sectors to influence preparedness or behaviour change. The results of this study provide some useful guidelines to how the Civil Defence Emergency Management education programmes in New Zealand could be conceived, constructed and conducted to achieve a beneficial increase in community preparedness.

During the 1990's a series of reviews examined how Civil Defence Emergency Management (CDEM) in New Zealand was being carried out under the Civil Defence Act 1983. These reviews identified the need for a new, more holistic approach to CDEM and resulted in the drafting of the CDEM Act 2002.

With the change in focus the new Act establishes a framework for CDEM aimed at building resilient New Zealand communities. The National Civil Defence Emergency Management Strategy is a part of this framework and is supported by a National Civil Defence Emergency Management Plan and regional plans developed by Civil Defence Emergency Management Groups.

Under the new Act, the primary goal for New Zealand communities is to be self-reliant. Self-reliance will be supported by communities aiming to reduce the likely impact of, prepare for, and be able to respond effectively to emergency events. To encourage this, regional cooperation and coordination is paramount and is one of the cornerstones of the Act. In addition, whole of community participation is key. All sectors with an interest in civil defence emergency management will be accountable for ensuring that their communities are aware of and committed to, effective civil defence emergency management.

The focus of the CDEM Act 2002 on a resilient New Zealand is strengthened by the National Civil Defence Emergency Management Strategy, where the Crown's vision for CDEM in New Zealand is encapsulated as: Resilient New Zealand – communities

understanding and managing their hazards. To support the vision Goal One of the Strategy is “To increase community awareness, understanding and participation in civil defence emergency management”.

As indicated by Goal One, achieving the vision of a Resilient New Zealand requires that communities are aware of New Zealand’s wide range of hazards and how these might affect them. Awareness by itself, however, is only the first step. New Zealanders must also understand the risks from hazards, ie, “what can this hazard do to me?” if they are to understand how they might need to respond to a hazard. A solid understanding of CDEM will build upon awareness and understanding of hazards and risks and encourage communities to actively participate in CDEM, through increased self-responsibility and involvement in such activities as risk planning decision-making.

Increasing both awareness and understanding can be accomplished through various forms of education – in the case of CDEM this has traditionally been known as ‘Civil Defence (CD) public education’. ‘Education’, however, is a complex task and there are challenges to both traditional CD public education strategies and with the wider concept of public education that impact on the effectiveness of CD education programmes.

### **Current issues for NZ Civil Defence Public Education**

Civil Defence education messages in New Zealand have traditionally been delivered at the local level by the 86 councils responsible for administering civil defence. Local and regional councils run a range of programmes aimed at their specific communities. Some have extensive programmes ranging from radio campaigns and newspaper advertising to school visits, while others have done little due to limited resources. This has resulted in inconsistency around the country in terms of how much is done to raise community awareness and preparedness.

There is some national coordination of public education programmes by way of national radio campaigns, development of standardised messages and production of a standard awareness/preparedness brochure, advertising in the Yellow Pages, and sponsorship of events.

Under the National CDEM Strategy, responsibility for the delivery of CD education sits with the CDEM Groups, supported by a National Public Education Strategy. This

five-year National Public Education Strategy has been developed through wide consultation with the CDEM sector by the National Public Education Working Group, which is chaired by the Ministry with representatives from local authorities, emergency services and EQC. (The strategy can be viewed on the [www.civildefence.govt.nz](http://www.civildefence.govt.nz) site)

In 2002 the Ministry undertook two nationwide surveys of CDEM offices. The first was aimed at developing a comprehensive picture of who was doing what around the country in the area of CD public education. This information and some of the resources that have been developed are shared on the website to assist those working on developing their local and regional public education programmes.

The second survey conducted through the National Public Education Working Group was aimed at gaining an understanding of what those tasked with delivering public education programmes saw as the key issues for raising public awareness and preparedness and how they could be addressed in the national public education strategy.

In summary, the key issues from the survey of CDEM offices were:

*Complex Hazardscape*

- NZ has a complex hazardscape, with a wide range of hazards
- Development and delivery of national programmes that are relevant to the diverse target audience is a challenge
- Existing resources do not cover all the hazards effectively

*Limited Resourcing*

- Current resources are limited at national and regional levels for campaign intensity to be effective
- Inconsistent delivery – there is a wide disparity in availability and quality of information in different regions and between agencies
- Specific ethnic groups, elderly and other special needs groups are insufficiently catered for within current resource material
- Limited coordination between national and local CDEM groups

### Low Levels of Community Preparedness

- Limited access to information
- Weakened community structures and lack of connection to community networks. Breakdown of the 'village'
- Difficulty in gaining audience attention and availability– decreasing volunteer numbers
- Multi-cultural environment challenges effective communication
- Socio-economic – at risk households have limited ability to prepare properly
- Wide range of demographics in NZ
- Personal acceptance and responsibility for individual risk is low
- Complacency - risks not taken seriously enough to convert to action

### *Competition*

- Cluttered landscape with intense competition for public attention
- Competing with other better resourced sources for public attention and availability, including other public good and safety campaigns

### *Many Audiences*

- Diverse range of audiences
- Complex challenges for delivering targeted programmes for such a wide range of audiences
  - Business Audience issues. While risk management is becoming a part of management, it is still not a priority for many businesses, especially the smaller businesses who are most at risk
  - School audience. CDEM information is not directly linked to curriculum and there are issues around inconsistent resources, both material and human. Also a need to better target different age groups and make available appropriate written material for the different audiences. It was identified that there was a need to have material written specifically for children.

### *Effectiveness of Programmes*

- Difficult to measure effectiveness of programmes. Pockets of research but no regional or national research on effectiveness of programmes.

\* *National Survey of CDEM Offices. MCDEM. August 2002.*

## **The Challenges for Public Education**

At present, public education work in the area of CDEM relies on the assumption that providing the public with information about a hazard and its consequences and thus raising their 'awareness' will cause the awareness raised member of the public to undertake some preparatory action to help prepare for the occurrence of the hazard. However, in general, awareness of an issue does not lead to action about the issue. That is, if we can raise the levels of awareness about an issue, we cannot assume that the entire 'now aware' population will have taken any action in relation to the issue.<sup>1</sup>

The new CDEM Act and its supporting documentation focuses on the need for communities to be resilient. If, however, members of communities are not taking action to achieve resilience even when they are aware of their hazards, how can resilience be created?

Chapter One of this paper examines the predictors of preparedness; firstly presenting the reasons people give for not preparing, then reviewing the literature to determine the main variables that predict preparedness, followed by a look at a model developed to predict preparedness. Chapter Two is a review of research investigating the effectiveness of various media types and content of public information, providing direction on how and what information should be communicated to effectively reach the public. Chapter Three provides a series of case studies of public education, social marketing and community development programmes, as well as a psychological intervention programme. Chapter Four is the summary of the findings, presented with recommendations for strategies that would support future CDEM programmes to heighten awareness and promote actions in relation to hazards in New Zealand.

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<sup>1</sup> This problem is explored in depth in Chapter One of this study report.

## Chapter One

### Predictors of Preparedness

Preparedness – the adoption of adjustments and preparatory measures such as storing food and water, strapping hot water cylinders and preparing emergency plans, reduces the risk of loss and injury within households, schools, workplaces and communities. Preparedness also facilitates a capacity for coping with the temporary disruption associated with hazard activity and minimises damage and insurance costs. As substantial funds are spent annually on public education programmes intended to facilitate hazard preparedness, a return on this investment (e.g., a reduction on reliance on external agencies, reduced insurance claims) is expected following a hazard event. This means that public education initiatives have to be effective in promoting preparedness behaviours (or adjustment adoption) and given an environment characterised by infrequent hazard activity, in maintaining this state of readiness over time (Paton et al., 2003)

In recognition of the fact that public education campaigns tend to have a poor success rate in turning awareness into action (Ballantyne et al., 2000; Duval and Mulilis, 1999; Lindell and Whitney, 2000; Mulilis and Duval, 1995; Paton, 2000), an investigation of the factors that motivate hazard awareness is necessary before considering new ways to facilitate change.

### Barriers to Action

Why is it that people don't want to prepare for a potential disaster? Logically it makes sense to take precautions to mitigate against the loss of personal belongings and disruption to life caused by a major hazard event. However there are numerous reasons that people find for not behaving 'logically' in the face of potential disaster. The following is an empirically based list of reasons individuals (in the USA and New Zealand) give for not preparing:

- Risk perception – “That event is never going to happen” (De Man and Simpson-Housley, 1987; Lehman and Taylor, 1988; Lopes, 1992)
- Optimistic Bias – “It's never going to happen to me” (Burger and Palmer, 1992; Greening and Dollinger, 1992; Lehman and Taylor, 1988)
- Response efficacy – “I don't have the time/money/skill to prepare”, “There are more important things to think about”, “I can't be bothered” (AC Nielsen, 2003; Lopes, 1992; Ronan et al., 2001)

- Outcome expectancy – “No amount of preparedness will help” (Lopes, 1992; Ronan et al., 2001)
- Normalization bias – “Wellington has earthquakes all the time, and I survive those” (Mileti and O'Brien, 1992)
- External locus of control – “Disasters are an Act of God”, “If it is meant to happen...” (Spittal, 2002)
- Transfer of responsibility – “Civil Defence will be there to help me” (Lopes, 1992)

Lack of preparedness is generally due to a combination of these factors, rather than just one specific reason. These barriers to action need to be addressed if increased preparedness in communities is to be achieved – that is, public education messages need to specifically target each of these perceptions. A detailed explanation of these influential factors is given below, along with other recognised predictors of preparedness, to provide insight into what has the most influence on preparedness. Ideally, factors that influence preparedness should be targeted in projects aiming to increase community resilience.

### **Risk Perception and Unrealistic Optimistic Bias**

There are conflicting views to whether risk perception is a predictor of preparedness, i.e. whether people who are aware of the hazard risk to themselves or their community are more likely to prepare. A number of studies have shown that this correlation between risk perception and preparedness does exist (De Man and Simpson-Housley, 1987; Johnston et al., 1999; Lindell and Perry, 1992; O'Connor et al., 1999; Sattler et al., 2000), however, other studies contradict these findings (Burger and Palmer, 1992; Lindell and Whitney, 2000a; Mulilis and Duval, 1995a). Unrealistic optimism and denial of risk have been found to prevent those who are aware of the risk to prepare.

Unrealistic optimism is the illusion of personal invulnerability, where people think that they are much more likely than average to have a happy future and much less likely than the average person to suffer various misfortunes {McClure et al., 2001; McClure et al., 1999}. The following is a classic example of optimistic bias:

*“Shoppers in Chicago, for example, estimated that if an atomic bomb landed in Chicago, it would kill 97% of the local residents. However, when asked to predict what they believed they would be doing after the bomb exploded,*

*more than 90% believed they would be helping to bury the dead or taking care of themselves and only 2% thought they would be dead” (Burton et al., 1993)*

This optimism can be beneficial by increasing motivation and persistence, but it also leads people to underestimate risk by transferring it to others. Where there is low personalisation of risk there is lower preparedness (Lehman and Taylor, 1988; Lindell and Perry, 1992; Lindell and Perry, 2000; Turner et al., 1986) as the need for it is not realised. Personal experience of disasters can reduce unrealistic optimism (Greening and Dollinger, 1992) however this effect decays with time (Burger and Palmer, 1992).

Unrealistic optimism also relates to the denial of risk. As a normal coping mechanism, people tend to deny risk, as a way to reduce the anxiety associated with thinking about the hazard. Denial of risk has a negative relation to the adoption of preparedness measures. A study of earthquake preparedness by De Man and Simpson-Housley (1987) found that people who had taken fewer precautionary measures tended to underestimate the likely damage, suggesting that people who have not taken precautionary steps cope with the threat of a disaster by denying its likelihood, creating a counterproductive circle of lack of preparedness. Denial is lower where people perceive that they have greater control over the hazard (Lehman & Taylor, 1988). This implies that denial may be reduced by changing people’s perceptions of the controllability of the hazard and by increasing actual control over the effects of the hazard (Duval & Mulilis, 1999).

### **Response Efficacy and Outcome Expectancy**

Response efficacy describes the personal capabilities and resources (e.g., time and physical resources) required to implement adjustments and preparatory measures, the perceived benefits associated with adoption (the greater the uses or benefits associated with a specific strategy, the more likely its adoption), and the degree of conflict between recommended actions and other important personal goals or needs (Paton et al., 2003). All the studies that have investigated response efficacy have found it to be a predictor of preparedness (Abraham et al., 1998; AC Nielsen, 2003; Lindell and Whitney, 2000a; Lopes, 1992; Mulilis and Duval, 1995a; Mulilis et al., 2000; Russell et al., 1995).

Outcome expectancy is the perception of whether personal action will effectively mitigate or reduce a problem or a threat (Bennett and Murphy, 1997). Outcome expectancies are strongly influenced by two factors:

1. The greater the general utility of a recommended activity or resource, the more likely it is to be adopted (Lindell and Whitney, 2000a).
2. Reduction initiatives typically focus on attempting to motivate people to adopt risk reduction behaviours or adjustments to deal with infrequently occurring but highly destructive or disruptive hazards like earthquakes, whose nature and intensity do not lend themselves readily to mitigation by individual action (e.g., Spedden, 1998). Effects perceived as insurmountable and emotionally threatening will lessen the likelihood of preparedness (Paton et al., 2003)

From this we can determine that preparedness measures that are shown to have day-to-day utility or benefit such as increasing the value of a house and that relate to achievable outcomes are more likely to be adopted.

### **Beliefs and Coping**

Locus of control, self-efficacy and problem-focused coping are all predictors of preparedness (Duval & Mullis, 1999; Johnston & Ronan, 2000; Lamontaigne & La Rochelle, 2000; Lindell & Perry, 1992; McClure, in preparation; McClure & Williams, 1996; Paton, Johnston Bebbington, Lai & Houghton, 2001; Paton et al., 2003; Sattler et al., 2000; Simpson-Housley & Bradshaw, 1978; Sims & Bauman, 1972; Spital, 2002; Turner et al., 1986).

People with an internal locus of control believe they have control over their own actions. In contrast, those with an external locus of control believe social forces, such as the government, chance factors such as luck or fate, or God, are the ruling forces. These beliefs about control are reflected in people's actions - those with an internal locus of control try to exert more control over their circumstances than those with an external orientation (Strickland, 1989). Therefore, people with an internal locus of control are more likely to adopt preparedness measures than those who think hazard events cannot be prepared for as they are out of their control.

Self-efficacy is an individual's appraisal of what they are capable of performing in a given situation. Bishop et al. (2000) and Paton et al., (2000) found a correlation between self-efficacy and involvement in community activities (e.g., membership of community clubs, local action groups), which suggests that those who have higher levels of self-efficacy developed it from dealing with everyday community issues and

have learned the ability to respond more effectively to unexpected adversity (Bennett and Murphy, 1997; Lindell and Whitney, 2000a). The personal involvement in, and responsibility for, decisions regarding personal safety, which come from being part of a community group are characteristics that increase a person's capacity to respond effectively to hazard effects. People with high self-efficacy, therefore, feel that they have the ability prevent damage and be self-sufficient in the event of a hazard through their own efforts and preparation.

Problem-focused coping describes actions taken to address the cause of a problem directly and is in contrast to emotion-focused coping, which indicates action taken to alleviate the negative emotions associated with a problem (Duval and Mulilis, 1999a). In the context of hazard preparedness, problem-focused coping encompasses taking actions to reduce the risk of damage or to minimize negative consequences of any damage that may be incurred. Therefore, people who deal with problems using problem-focused coping are more likely to prepare than those who use emotion-focused coping.

Hazard anxiety has also been proposed as a factor capable of reducing the likelihood that people will prepare themselves to deal with their consequences (Duval and Mulilis, 1999a; Lamontaigne and La Rochelle, 2000). That is, when people are anxious about a hazard they can be less likely to prepare because acknowledging the existence of a threat (e.g., attending to risk communication) triggers anxiety. To reduce anxiety, such messages are ignored. This can mean that even those with a high hazard anxiety will not do things to prepare for a hazard because to do so triggers anxiety.

### **Demographic Characteristics**

Many studies investigating preparedness have examined the relationship between demographic characteristics such as sex, age, education, income, marital status, presence of dependants (school-age children or the aged), ethnicity, immigrant status, neighbourhood tenure and home ownership and levels of preparedness (Edwards, 1993; Lindell and Perry, 1992; O'Connor et al., 1999; Perry and Mushkatel, 1986; Russell et al., 1995; Sattler et al., 2000; Spittal, 2002; Turner et al., 1986).

Although there is an inconsistent pattern of correlations with preparedness there is a general trend of those who are most likely and those who are least likely to be prepared. Those who are most likely to prepare:

- Have a higher household income
- Have higher educational attainment
- Have children in the household
- Own their own home
- Have lived longer in the community

Those who consistently have lower levels of preparedness:

- Have a low household income
- Belong to an ethnic minority

Age is generally assumed to be a predictor of preparedness with older people being less prepared due to socio-economic status, however this is not always the case. By virtue of life experiences or social support, older people are often able to avoid the negative effects of a disaster (Kaniasty and Norris, 1993; Norris, 1992).

### **Hazard Proximity**

Three studies on reported seismic adjustment adoption were inconclusive on whether proximity to a fault predicted preparedness. Farley et al. (1993) reported that adoption of adjustments was correlated with proximity to the New Madrid fault. In contrast, Palm (1990) and Mileti and Darlington (1997) found no association with proximity to an earthquake fault. In terms of volcanic hazards, Taranaki residents living in high risk areas or closer to the volcano are no more likely to be prepared than those living outside the hazard area or at a greater distance from the source (Finnis, in preparation).

### **Previous Experience**

Overall, the literature suggests that prior experience of a hazard event promotes preparedness as it leads to greater awareness of the consequences of disasters and the demands that disasters generate. At the individual and household level, many studies have shown experience with actual events has a positive impact on the willingness to prepare for future disasters (Dahlhamer and D'Souza, 1997; Dooley et al., 1992; Faupel et al., 1992; Greening and Dollinger, 1992; Lindell and Perry, 1992; Mulilis et al., 1990; Russell et al., 1995; Sattler et al., 2000; Tierney, 1993; Weinstein, 1988).

At the community level, an extensive review of the literature conducted by Drabek (1986), concluded that the more disasters a community experiences, the more extensive their planning efforts will be. This finding has been replicated in research on local emergency preparedness agencies (Rogers and Sorensen, 1991) and local preparedness networks (Gillespie and Streeter, 1987).

There are, however, instances where previous experience does not lead to increased preparedness. This is due to the degree of the experience. For example, experience of a minor hazard can lead to normalisation bias (Mileti and O'Brien, 1992), whereby respondents infer from a minor impact, on the basis of an inappropriate assumption regarding the adequacy or effectiveness of their existing preparation, an ability to cope with any future occurrence or assume that future events will not adversely affect them. This lessens their perceived need for preparation and can even decrease levels of preparedness (Paton et al., 2001a). Recent studies suggest that preparedness activities may be predicted better by the direct experience of adverse disaster consequences to the individual and his or her close associates than by measures of community-wide impact (Lindell and Prater, 2000).

Although experience with a hazard event may not always have a direct influence on preparedness, indirect influences have been noted. Lindell and Whitney (1995) concluded that disaster experience positively influences community support for preparedness, which in turn affects disaster readiness. However, it has been noted that when hazard impacts and consequences are unevenly distributed in a community, the loss of community cohesion can reduce support for future mitigation (Paton et.al., 2001).

### **Information Seeking and Critical Awareness**

Information seeking is consistently a predictor of preparedness (Kartez and Lindell, 1987; Mileti and Darlington, 1997; Mileti and Fitzpatrick, 1992; Ronan et al., 2001; Turner et al., 1986). Those who actively look for information on hazard risks and what to do to prepare obviously have a motivation and therefore are more likely to see the process through. People also often respond to new risk information by engaging in disaster related 'conversations'. These are performed to resolve any ambiguity introduced by the information. The public often relies on social networks rather than official agencies as a stimulant to engaging in preparedness behaviour. The media is often used by the public as a surveillance tool and the public then seek advice and

suggestions from friends and relatives before deciding what specific actions to take (Ronan et al., 2001).

Critical awareness, also an important predictor of preparedness (Dalton et al., 2001; Paton et al., 2003; Seedat, 2001), describes the extent to which people conduct such conversations and the extent to which they think about the hazards in their environment. Critical awareness is a process that exists under normal, pre-disaster circumstances that involves conscious reasoning about issues people perceive as critical or salient (Dalton et al., 2001), or one which is symptomatic of subconscious processing of information following a traumatic experience (Lindell and Whitney, 2000a). It is the former of these that is used to predict preparedness.

### **Behavioural Intentions**

Paton et al. (2003) investigated intention at Time One and actual preparedness at Time Two. Only one study, Farelly et al. (1993), has addressed the relationship of intention to prepare at a 'Time 1' and the level of preparedness at a 'Time 2' in relation to hazard events. This study found that those who planned to prepare in response to an earthquake prediction carried out their planned changes. Models developed to explain the adoption of preventative behaviour for health related threats found that intentions are a key indicator of the adoption of preventative behaviour (Abraham et al., 1998; Ajzen, 1991; Bennett and Murphy, 1997; Godin and Kok, 1996; Gollwitzer, 1993). Paton et al. (2003) discussed how these concepts may be applied to more complex natural hazard issues. Health studies focused only on positive intentions. Paton (2004) and Paton et al. (2003) identified both positive and negative intentions. While the former led to preparedness behaviour, the latter did not. This suggests that preparing or not preparing is a function of very different reasoning processes (Paton, Kelly & Doherty, in preparation).

### **Perceived Protection Responsibility**

Perceived protection responsibility refers to a person's perception of who they think should be responsible for being prepared, rather than who is responsible for, or in control of the event (locus of control). People who feel that they are ultimately responsible for preparedness and response in the event of a hazard (rather than believing, for example, that it is the responsibility of the government) are found to be more likely to take action (Lindell and Whitney, 2000a; Mulilis and Duval, 1995a; Mulilis et al., 2000). This poses a challenge in the delivery of public education messages about hazards, as one study has shown that following an education

programme delivered by Auckland Regional Council, EQC and GNS, respondents actually became less concerned as they attributed responsibility for preparing for the hazards discussed to these agencies (Ballantyne et al., 2000a).

### **Risk Communication/Public Education**

There are certain elements of mass media campaigns that are predictors of preparedness, namely quality, quantity and source. Studies (Mileti and Darlington, 1997; Mileti and Fitzpatrick, 1992; Mileti and O'Brien, 1992) have shown that people are more likely to prepare when they receive information that:

- a. Provides specific details on how to prepare, what to do in an emergency and where to get further information from
- b. Comes from many various (trusted) channels such as government, scientists, friends and relatives
- c. Is disseminated via many media types, such as television, radio, brochures;
- d. Is consistent across all the channels and sources
- e. Is disseminated frequently

### **Sense of Community**

Sense of community (feelings of attachment for people and places) has been found to influence preparedness (Bishop et al., 2000; Paton, 2000a). Specifically, it is thought that people with strong feelings of belonging to a given area or place are more likely to convert intentions into actual preparedness. At present the role of this variable is ambiguous. It does appear to be important as a driver of action to deal with hazards that are evenly distributed throughout a community. There is no evidence to support its use as a predictor of preparedness during quiescent periods. Another problem with this variable concerns the fact that most studies have used measures that tap into locational communities and not relational communities (Paton, 2004).

### **Predictors of Business Preparedness**

Only one study found has addressed the determinant of preparedness across a range of businesses. Dahlhamer and D'Souza, (1997) examined a range of businesses at risk of earthquake and floods. Businesses with a large number of employees, finance, insurance or real estate businesses, business that own their property and businesses with prior disaster experience are more likely to prepare than small businesses, manufacturing, retail/wholesale and service businesses,

businesses that lease their properties and businesses that have never experienced a disaster.

### **A Model for Predicting Natural Hazard Preparedness**

The above section shows that there are many variables responsible for predicting whether people are more or less likely to prepare. However, it would not be possible to incorporate a strategy to address every variable in a public education campaign. Some variables can be influenced through providing information, while others require a more 'psychological' approach or simply life experience. Also, many of the variables are interrelated, meaning, only one would have to be addressed to have influence on the other(s). So which variables are the most important predictors of preparedness? The following section presents a model that has identified the key predictors of preparedness through testing and validating with survey and focus groups data.

### **Predictors of Preparedness - Model**

Paton et al. (2003) developed and tested a social-cognitive model of preparedness to assist both research and the formulation of practical risk communication strategies. It is based on models proven to predict the adoption of preventative health behaviours, as the challenge with health messages – translating awareness of an issue to action about it, is a parallel problem. Health promotion work suggests that preparedness is facilitated by moving from a focus on the antecedents of behaviour (in this case risk perception) to the cognitive processes that underpin behaviour change and its maintenance over time (Paton et al., 2003).

Research has discovered that many variables found to influence behaviour change in health research also influence natural hazard preparedness (Bishop et al., 2000; Duval and Mullis, 1999a; Lindell and Whitney, 2000a; Paton, 2000a; Paton et al., 2001b). From this, several additional social cognitive variables capable of playing a role in the preparation process have been identified. The social-cognitive variables Paton et al. (2003) identified for use in this model are: risk perception, critical awareness, hazard anxiety, outcome expectancy, self-efficacy and problem-focused coping. Perceived timing of the next hazard event is another variable used in the model. Paton's model is outlined in Figure 1.

The variables used by Paton et al. (2003) fall into three categories:

- Precursor variables – risk perception, critical awareness and hazard anxiety.

- Intention formation variables – outcome expectancy, self-efficacy and problem focused coping, critical awareness.
- Moderating variables – time.

Risk perception, critical awareness and hazard anxiety are the factors that initially motivate people to prepare. If these variables are present at the appropriate levels, a person will progress to forming intentions to prepare. Health promotion models have found that intentions are a key indicator of the adoption of preventative behaviour.

Intentions, in relation to hazard preparedness, have been found to have two components: intention to *prepare* and intention to *seek information*. Outcome expectancy, self-efficacy and problem-focused coping are all *predictors* of the *intention to prepare*, as well as critical awareness, whereas *self-efficacy* and *critical awareness* are the only *predictors* of the intention to *seek information*. Preparedness is *only predicted* by the intention to prepare. Even if a person has an intention to prepare, preparedness may not eventuate due to the perceived infrequency of the hazard event (See Figure 1, p.22).

When developing the model, other recognised variables (perceived responsibility, response efficacy and sense of community) were tested as to their predictability of preparedness due to their documented influence found in the research. Perceived responsibility was only found to moderate the relationship between intention to seek information and preparedness. In regards to sense of community, it was suggested that this might be less influential in periods of hazard quiescence. No effect was found for response efficacy in this model, however it is possible it may have an effect if tested between different variables. In short, the role of sense of community and response efficacy cannot be ruled out and need to be investigated in further work.

This developmental process or preparedness should be considered when designing strategies aimed at increasing community preparedness. Effectively promoting preparedness will require approaches whose nature (e.g., public education, community development) content (e.g., hazard characteristics, readiness activities etc.) and media are designed to emulate the stages of the preparedness process; motivating people to prepare, encouraging the formation of intentions to prepare and ensuring the conversion of intentions to preparedness while addressing the influencing variables (e.g., self-efficacy, problem-focused coping).

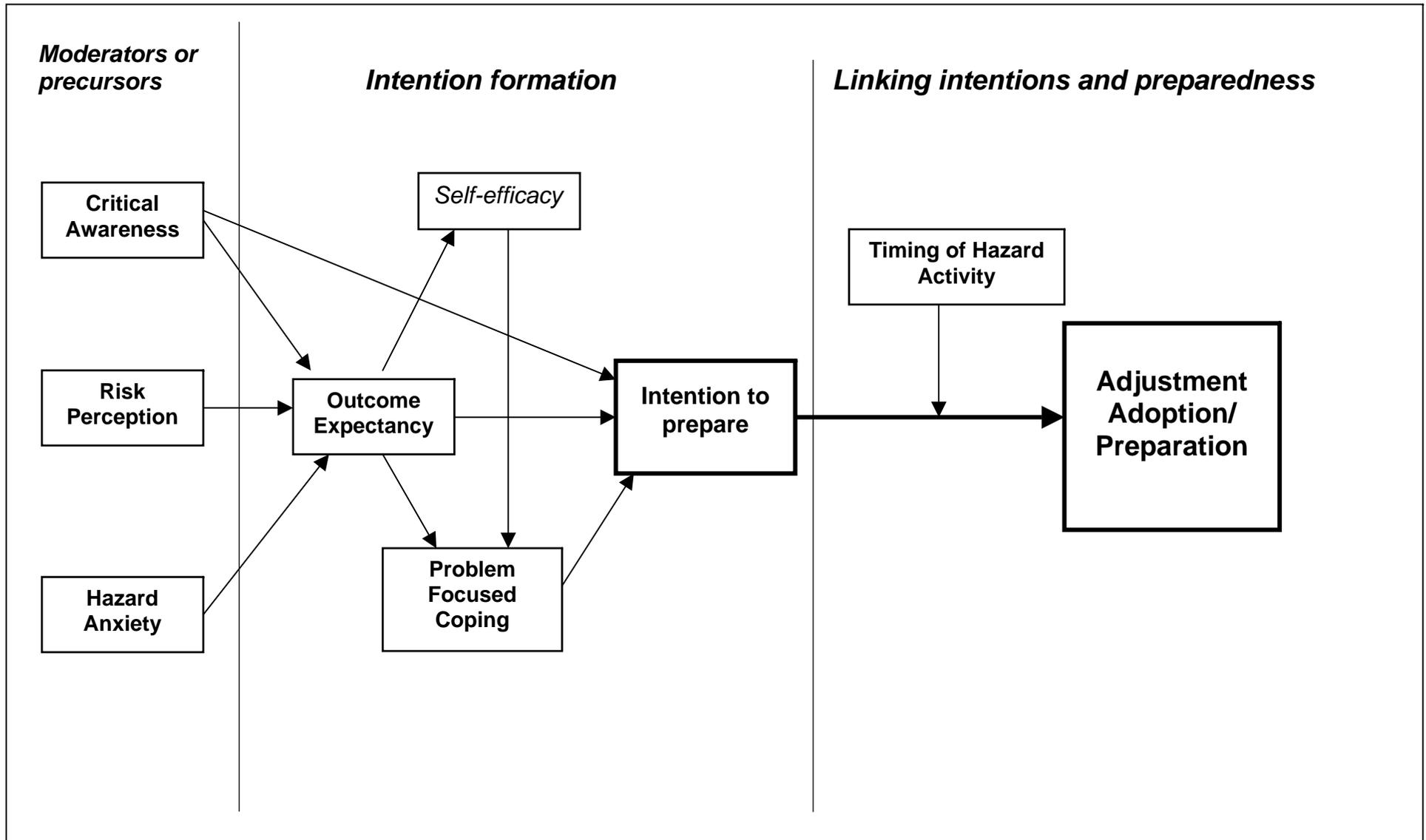
The table below shows strategies Paton et al. (2003) propose to facilitate change in model variables.

| Stage of Process    | Element                | Basic Strategy                              |
|---------------------|------------------------|---|
| Precursor           | Risk perception        | Communication                               |
|                     |                        | Public Education                            |
|                     | Critical Awareness     | Empowerment                                 |
|                     | Anxiety                | Communication<br>Psychological intervention |
| Intention Formation | Outcome expectancy     | Communication                               |
|                     |                        | Empowerment                                 |
|                     | Self-efficacy          | Empowerment                                 |
|                     | Problem-focused Coping | Empowerment                                 |
| Moderator           | Time                   | Communication                               |

**Table 1.** Possible strategies to facilitate change in variables (Paton et al., 2003)

The next section of this work is a brief overview of the research conducted into the different types of media and content used in hazard education strategies. It investigates implications of their use.

Figure One: Adapted Social-Cognitive Preparation Model (Paton, 2003)



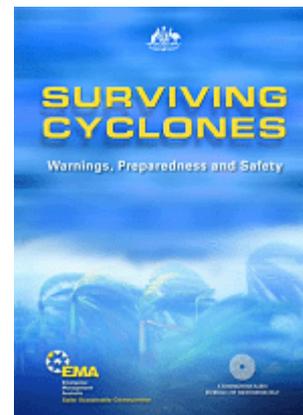
## Chapter Two

### Communication Type and Content

To be effective in motivating people to prepare, communications not only have to have consistent information, be received frequently, contain specific messages and be delivered by a number of trustworthy sources (Mileti & Darlington, 1997; Mileti & Fitzpatrick, 1992; Mileti & O'Brien, 1992) but they also have to be appealing and deliver the message through the most effective media. The following is a summary of research investigating the effectiveness of media types and content of public information.

#### Where the public gets its hazard information

Each year, Australia's Bureau of Meteorology (BoM) conducts cyclone awareness campaigns before the cyclone season begins. These campaigns take place through public meetings in coastal towns, local government briefings, and presentations to schools, media briefings, press articles and supplementary literature such as brochures and pamphlets. To evaluate the effectiveness of various components of the cyclone awareness campaigns and explore community preferences for cyclone awareness information and



education in terms of format and mode of delivery, Anderson-Berry, King and Crane (2003) conducted a survey of 915 Cairns and Townsville residents at the beginning of the 2002 cyclone season.

#### Results

80.5% of respondents remembered seeing information about cyclones during the past two months - the type of information about cyclones the residents could recall seeing was:

- TV - 41.8%
- Pamphlet - 22.4%
- Newspaper - 15.6%
- Radio - 3.0%
- Book - 2.6%
- Other - 4.4%
  
- 4.5% of the respondents attended public meetings
- 75.2% of households had cyclone information on-hand

The type of information on-hand in households was:

- Pamphlet - 56.8%
- Newspaper - 5.5%
- Book/Booklet - 16.7%
- Other - 7.4%

The source of cyclone information on-hand was:

- Don't know - 23.4%
- Cairns Post - 9.0%
- Other - 15.5%
- Suncorp (Ins) - 2.1%
- Council - 9.8%
- BoM - 1.9%

Where residents considered would be the most convenient way to find out more about weather information (could select more than one):

- Internet - 22.5%
- BoM website - 10.6%
- Pamphlet - 1.7%
- TV - 19.8%
- Newspaper - 8.0%
- Other - 18.0%
- Radio - 6.3%

Where residents access tropical cyclone warnings during a cyclone:

- Radio - 82.3%
- Family and Friends - 1.9%
- Television - 36.0%
- Other - 2.8%

## **Summary**

- TV is the most successful media for disseminating pre-cyclone season awareness information followed by pamphlets.
- The preferred type of information to keep on hand is pamphlets and books/booklets.
- Public meetings are not a successful vehicle for educating the general public.
- Although BoM is responsible for nearly all of the cyclone information provided this is poorly recognised by the public. Agencies need to clearly identify themselves on brochures, leaflets and booklets when using this media to provide the public with focused information.
- Less than 10% of respondents said they would go to the sources they receive information from when looking for information. Almost one quarter of residents considered that the internet would be a convenient way to find weather information.

- A significant majority of respondents stated that they access the radio for cyclone warnings during a cyclone.

### **Target Groups and Communication Types**

In a study conducted by Perry (1987) in the United States, ethnic groups were asked to state their preferences for hazard information receipt via different channels.

Respondents were asked to select the 'most preferred' communication channel, i.e. the one most likely to reach them, out of the following: direct mail, newspapers, local radio, local television, speakers at community organisations, or neighbourhood meetings.

#### **European respondents:**

- Preferred newspapers, mail and radio
- Selected speakers, neighbourhood meetings and local television infrequently

#### **Hispanic respondents:**

- Preferred radio and neighbourhood meetings.
- Moderately preferred newspapers and television.
- Selected direct mail and speakers at community organisations infrequently.

#### **African American respondents:**

- Preferred radio, direct mail and television.
- Selected newspapers, neighbourhood meetings and speakers infrequently.

Similar differences between ethnic groups have been found in a local setting, when the New Zealand Fire Service (NZFS) investigated preferred communication sources between ethnic groups as well as other target groups (CM Research, 2000). Here the media types with the most positive influence also included schools, parents, work and past experiences. Preferred source of information in this study is provided by media type rather than ethnic group.

#### **Television advertising preferred by:**

- Low socio-economic

#### **News stories:**

- No significant difference between groups

**Through schools:**

- Maori
- Households with children
- Renters
- Younger people

**Smoke alarm promotions and advertisements:**

- Low socio-economic groups

**Fire service brochures and pamphlets:**

- No significant difference between groups

**Parents:**

- English as a second language
- Younger people

**Information provided at work:**

- Minority ethnic groups
- English as a second language

**Past experience with fires:**

- Rural people

**Friends and neighbours:**

- Maori
- English as a second language

**Brochures and Videos - How people like them**

Rohrmann (2000) conducted an assessment of materials provided by the Victorian Country Fire Authority in a bushfire preparedness programme. The assessment focused on information/education programmes for residents, in particular the materials used by the relevant authorities.

The research aim was to clarify the following issues:

- Which factors determine whether residents evaluate information material as useful?
- How do officers and experts assess the utility of education materials?

- What is the role of texts and audiovisual materials in relation to group activities such as community 'fireguard' groups?

The impact of the different means of bushfire information/education brochures and videos was investigated in several studies using surveys and focus groups.

Focus groups provided a comprehensive insight into the viewpoint of information receivers. This information is summarised on the following page.

In two surveys, residents were asked to appraise bushfire brochures. Residents compared and appraised a black and white 2 page, on one sheet; the same but with 3 colour pictures; and a 30 page colour booklet – the most popular was the 30 page booklet followed by the 2 page with colour.

Country Fire Authority Officers were interviewed about what they thought important features in brochures to be. The features are listed below with their importance ratings (1 - not very important, to 5 - very important)

- |   |  |
|---|--|
| ▪ Lists of essential activities and steps - 4.5 | ▪ Contact addresses and phone numbers - 4.3        |
| ▪ Illustrations (photos, drawings, graphs) -4.3 | ▪ Lists of necessary equipment - 4.1               |
| ▪ Checklists (to be ticked) - 4.0               | ▪ List of references and relevant literature - 3.6 |
| ▪ Glossary of technical terminology - 3.4       | ▪ Space/grid for drawing plan - 2.8                |

**Brochures - content & length:**

- Information should be factual, concise, presented in point form or ordered lists and be relevant to the specific target audience
- Should include information on personal safety, evacuation, animal issues, local information relevant to the community, and phone numbers for emergency situations
- Suggestion of a booklet of detachable brochures on different issues) so residents can keep relevant materials as a reference and discard others)
- Preference for rather compact leaflets/brochures

**Presentation/layout/style of brochures:**

- Illustrations seen as very important; coloured, illustrated brochures preferred
- Pictures seen as essential to attract attention and to add emotional tone
- Diagrams and drawings often more instructive more instructive than photographs
- Lists to 'tick' and 'fill-in-yourself' sections appreciated but not much utilised

**Usefulness of videos studied at home:**

- Pros: visual presentations very instructive; easier to understand concepts presented orally and visually; can add in-depth/technical to general information; 'real-life' footage has greater impact than photographs
- Cons: videos (if not very short) may be considered as too time-consuming and hence not much watched; content can't be referred to instantly in the case of emergency.

**Media: Radio/Television/ Newspapers:**

- Short information spots on the radio (to remind residents to take action to prepare for the fire season) are appreciated.
- Positive attitude towards TV ads on bushfires (tend to be remembered)
- Residents expect to see bushfire awareness messages in a range of media, particularly newspapers, close to the bushfire season.

**Information from the Internet/WWW:**

- Residents not yet connected to the Internet: can not imagine its potential; little enthusiasm for seeking bushfire information on the WWW
- If connected: not very familiar with the possibilities; scepticism regarding relevance for residents; accessibility in emergency situations questioned.

Two often-used videos on bushfire preparedness were exposed to resident focus group discussions. The main viewpoints of participants are summarised below.

- Real-life footage of bushfires seen as important to raise awareness of the potential physical and emotional impacts of bushfire and thus prompt action to prepare.
- This to be complemented by practical advice on how to prepare for and fight bushfire.
- Practical, low-cost suggestions for protecting the home are highly valued
- Information should be presented in a calm and rational manner - to foster a sense of confidence and control (and possibly decrease fear).
- Videos should be concise and logically structured, with succinct text headings.
- They should be supplemented with point-form handouts summarising the key points.
- Information is best conveyed by fire-fighters (providing factual knowledge, e.g., on bushfire behaviour) and actual residents reporting experiences and demonstrating preparedness activities (rather than by officials or experts).
- Should include advice on what not to do in a bushfire and try to dispel common myths.

Rohrmann's conclusions for future work are:

- Whether short one-issue leaflets or comprehensive booklets are preferred depends on the context of the utilisation.
- The use of (colour) illustrations is expected but their educational value is somewhat ambiguous, professional drawings should be considered.
- A set of videos should be considered, starting with a bushfire introduction, followed by a set elaborating on more specific issues.
- Accompanying booklets which are linked to video material would enhance their utility.
- Amount of text and use of graphs for demonstrating bushfire effects need to be explored further.
- Future investigations should also include feasibility and efficiency of information delivered via CD-ROM's and the internet.

## **Images in disaster preparedness presentations**

A survey of 4,739 attendees of American Red Cross disaster education presentations was conducted by Lopes (1992) (USA) to determine the effect of using disaster damage images of tornadoes, floods and earthquakes on levels of preparedness.

Stated reasons for using disaster damage images for presentations are:

- The public needs to see what could happen after a disaster
- The drama of a good photo holds attention
- People will remember these images long after they see them
- Disaster damage images are interesting for presenters to use

As well as indirect reasons such as:

- Making an indirect statement, 'Don't let this happen to you'
- Appealing to guilt – if one had done something to prepare ahead of time, damage would be reduced

Red Cross volunteers and emergency management officers gave a total of 40 presentations. Each presenter was provided with American Red Cross 'Talking Points' (1991) for his or her assigned hazard and two sets of slides. The first set of 60 slides included 15 illustrating disaster-caused damage. The alternate set of 60 slides did not show any images of disaster damage, only images of the correct actions to take. Presenters were instructed to alternate the presentations they made between those that included disaster damage images and those that did not. Each person attending the presentations was asked to register and agree to be telephoned for a follow-up six months after the presentation. In addition, each person was asked to complete a short questionnaire that was coded for each presentation or later correlation. At the six-month follow up, those attendees who could be contacted were asked if they could recall the presentation. A total of 3,746 were contacted and 2,376 people remembered the presentation.

### **Results Summary (Complete result tables are provided in Appendix 1)**

"Do you have all your supplies in the one place?"

- Average 5% increase in yes responses across the three hazards for people who saw presentations with damage images
- Average 46% increase in yes responses across the three hazards for people who saw presentations without damage images

“Do you feel you and the members of your household would know what to do in case a disaster happened right now?”

- Before the presentation 66% (average across the three hazards) claimed they would know what to do
- After the presentation, this dropped to 56% for those who saw damage images and increased to 82% for those who did not see damage images.

“Do you really think a disaster could happen where you live?”

- Before the presentation 17% answered yes (average across the three hazards)
- After the presentation, 19% answered yes in the group who saw damage images, where as 46% answered yes in the group who did not see damage images

People who did not see disaster damage images most often quoted responses for not preparing as follows:

- I haven't gotten around to it (78.1%) *Apathy*
- I can't afford it (11.3%) *Avoidance*
- I just don't think it can happen here (5.2%) *Denial*
- Someone else will take care of me (3.4%) *Myth*

However, those who saw presentations with disaster images predominantly had denial or avoidance responses, as noted:

- I don't want to think about it (52.0%) *Avoidance*
- If it is that bad, there's nothing I can do about it (21.2%) *Denial*
- It's too horrible to talk to my family about it (11.5%) *Avoidance*
- I don't want to frighten my family (8.1%) *Avoidance*

## Summary

- The public must not only be told what to do but also be shown what to do.
- Disaster damage images enhance recall of a presentation. However, presentations that include visuals showing disaster damage have a direct negative effect on the purpose of disaster education presentations, ie., to encourage the public to prepare in advance for a disaster.
- Showing disaster images causes little difference in public perception of belief that a disaster could happen. Not showing disaster images, however, does cause a significant increase in the number of people who will state that they believe a disaster could happen where they live.

- More members of the public will take appropriate preparedness steps and feel more able to deal with disaster when they are shown correct behaviours as opposed to images of damage that may occur as a result of a disaster.
- Disaster damage images heighten avoidance and denial because they increase levels of anxiety beyond productive levels. An increase in anxiety does increase attention and learning effectiveness. However, if the level of anxiety exceeds specific levels, people are then motivated to seek ways to reduce anxiety. Since they cannot deny the effects of disaster (in images) per se, they will avoid the images. They may also engage in activities that seek to distance themselves from people represented in the images. People may also seek to distance themselves from anxiety provoking images by changing their attitudes to the information and its source (e.g., seeing it as less reliable and trustworthy).

### **Key Messages**

The studies around communication type and content can be summarised into several key messages that should be considered when developing public education messages and their delivery.

- Generally, people like to receive their information from the television, pamphlets, and the newspaper.
- When seeking information people tend to prefer getting it from other sources such as the internet and friends and family.
- Brochures/pamphlets are the preferred reference medium.
- Different demographic groups have different access and preference of information media.
- Brochures are best preferred as small, colour, illustrated booklets.
- Disaster damage images may increase recall of the information/education campaign but have detrimental effects on levels of preparedness. Positive, instructional images should be used instead.

The following chapter explores case studies of different communication strategies, community development/empowerment programmes and a community psychological intervention.

## Chapter Three

### Case Studies

This chapter investigates the effectiveness of various public education strategies, 'Social Marketing' initiatives and community development techniques employed by both hazards and non-hazard sectors. A psychological intervention is also examined. Investigations take the form of a brief introduction to the strategy and/or problem; methods used (where available); results; recommendations made by the study and an overall summary of the themes that have been identified. Results tables have been included so readers are able to form their own judgements from the figures.

Section A is a brief overview of the current civil defence public education strategies presently used by the Ministry of Civil Defence & Emergency Management and regional and local councils. As yet, there have not been any investigations into the effectiveness of these strategies. This information has been provided to give some insight into the variety of communications being used and to provide a basis for a later discussion on how these programmes may be enhanced by effective strategies observed in the following case studies.

#### A. Current Civil Defence Public Education Resources

The Ministry of Civil Defence & Emergency Management currently coordinates a number of national programmes, with local and regional councils taking charge of programmes aimed at their specific community. To create a centralised database of these resources, the Ministry of Civil Defence & Emergency Management conducted a survey in 2002 of the local and regional councils, investigating what was being done to raise public awareness and preparedness. Just over half of the councils responded to the survey. The database of who's doing what in civil defence public education was designed to help those tasked with delivering programmes to efficiently plan for and deliver public education programmes by offering easy access to information and resources developed by others around the country.

The following is a summary of the database which can be found on the Ministry website - [www.civildefence.govt.nz](http://www.civildefence.govt.nz)

## **National Resources**

### **“Will you cope when disaster strikes” brochure**

- This brochure was developed in consultation with the sector and incorporates general information on what to do to be prepared for a range of hazards – earthquakes, storms, floods, tsunami and volcanoes.

### **Public education display**

- Three standalone displays that reinforce the key messages in the brochure. The display strongly reinforces the CD branding and has been offered for use to councils for their promotions.

### **National radio campaign – “Know what it takes”**

- Campaign began in June 2002, which is still running. Councils have taken up opportunities for local campaigns, based on the national concept.

### **Yellow Pages advertising**

- The Ministry coordinates the full-page advertisements in the 18 Yellow Pages telephone directories around the country. In addition a package has been negotiated so that extra pages are provided to civil defence organisations at a 70% discount.

### **Sponsorship**

- The Ministry coordinates sponsorship packages such as the Earth’s Fury exhibition that ran from Dec 2001 to late 2003 and the development of the Tsunami display at the National Aquarium.
- Opportunities are offered for promotional support to councils for activities planned around the event.

### **Website - [www.civildefence.govt.nz](http://www.civildefence.govt.nz)**

- The 2002 launch of [www.civildefence.govt.nz](http://www.civildefence.govt.nz) was designed to build on the long established brand awareness that civil defence has and provide an easy to find central web portal where people could access civil defence information
- The homepage offers a local authority contact finder for people to locate their nearest civil defence office.
- The section on Resources for the Emergency Sector offers access to a range of guidelines and resources for the sector

- There is a wide range of information for the general public on hazards, and how to be prepared, a dedicated Kids' World section and helpful links. Publications such as Tephra (the Ministry's hazard education magazine) are also offered online.
- Old Ministry publications which are no longer in print are available online and include: Emergency Procedures - Guidelines for Early Childhood Services, Emergency Information for Businesses (series of three) and History of Civil Defence in New Zealand.

## **Regional and Local Council Resources**

The percentage figures below correspond to the number of respondents who engage in an action from the councils who responded to the survey.

### **School Programmes**

- Around 78% provide information to schools, with brochures, posters and videos the most common media provided.
- Resources are primarily provided in English, 13% Te Reo and under 10% for other languages.
- 30% produce school kits, which mostly contain brochures and posters, along with games and books.
- For the other kinds of programmes and/or educational material used (18 councils)
  - 39% involved working with children at schools or in exercises,
  - 10% involved providing assistance to schools for plan development,
  - The rest involved providing the school with a resource (video, book, etc.).

### **Community Programmes**

- Floods and earthquakes are considered to be the hazards the communities needed to be most aware of, with storms, volcanoes and tsunami considered the next most important.
- 88% provide information to their communities, most commonly as brochures, posters and videos.
- 40% produce a variety of brochures on issues like volunteering, the Taranaki eruption, marine oil spills and household emergency plans.
- 53% advertise on the radio.
- For the other ways 25 councils communicate with their communities:

- 8% involve community exercises/preparedness programmes,
  - 28% involve some community contact,
  - The rest involve providing information generally through print media and plans.
- 73% use volunteers with 65% of these volunteers offered training programmes:
  - They are recruited because of their involvement with other organisations, word of mouth and recruitment campaigns,
  - They are used for rural fire, rescue teams, response groups and communications,
  - Content of the training programmes vary from basic CD roles, technical systems to extensive training in response, rescue and welfare.

### **Business Programmes**

- 68% are involved in helping businesses plan for hazards
  - Brochures, posters and videos are the most common media provided
- Other information provided consists of planning guides, assistance with hazard identification and weather data
- 5% hold building wardens courses
- Business training includes workshops on scenarios and work with organisations to identify hazards/risks

## **B. Public Education Case Studies**

Although Public Education campaigns are recognised as having only small successes in changing peoples behaviour (see Introduction) organisations still undertake them for a variety of reasons - they can reach a large number of people at one time; it is part of their strategic plan; they have been given money for public education; they can operate campaigns on limited budgets; they are unaware that public education does not effectively lead to behaviour change or they cannot find a better solution.

Public education generally consists of the delivery of information via television, radio and print advertising, posters, brochures, fact sheets, magnets, focus groups, forums – indeed anywhere a message can be delivered.

The case studies for Public Education are 'The Next Big Earthquake in the Bay Area' a publication produced by the United States Geological Survey (USGS), which was deemed to have success in preparing people for the next big earthquake to strike the Bay Area in California, the New Zealand Fire Service's National Promotion Strategy and Earthquake Commission's (EQC) communication programme.

### **The Next Big Earthquake in the Bay Area (Mileti & Darlington, 1995; USGS, 1990)**

Following the October 1989 Loma Prieta earthquake, the Working Group on California Earthquake Probabilities issued a report concluding that a 67% probability existed for a magnitude 7.0 or greater quake to occur in the San Francisco Bay Area in the next 30 years. Scientists, government officials and members of private disaster response organisations sought an effective way to inform citizens about the probabilities. Social scientists convinced these groups that a written document would be the most effective.

#### **The Insert**



A document was prepared to be included in a Sunday edition of Bay Area newspapers, with the potential to reach over 580,000 households. The insert "The Next Big Earthquake in the Bay Area May Come Sooner Than You Think" first appeared on September 9, 1990, was magazine-like in appearance (approximately A4 size, printed in multiple colours on slick bond paper, 24 pages) and distributed in several languages. The document was divided into the following sections:

1. A major earthquake is likely soon
2. What to do right now to prepare
  - a. Learn how to duck, cover, hold
  - b. Develop an earthquake plan at home, in your neighbourhood, at school, at work
  - c. Make your own earthquake survival kit
  - d. Protect your belongings
3. How to Reduce Earthquake Damage
  - a. Estimate your risk
  - b. Determine the safety of your home and school
  - c. Determine the safety of other buildings you use
  - d. More information on buildings and bracing
  - e. Understand how earthquake risk varies by location
  - f. Determine if you live or work in a particularly hazardous area
4. Why a major earthquake is highly likely
  - a. Conclusions of a panel of experts
  - b. Some scientists believe the estimate may be too low
  - c. How scientists estimate probability
  - d. Probabilities based on strain accumulation
5. How to respond to earthquake advisories
6. Where to get more information
7. Credits and disclaimer

The insert also contained maps and pictures, for example, there was a centrefold map of the Bay Area illustrating the location of faults and ground conditions with different prospects for shaking or failing in a large quake.

### **Reported effectiveness of the insert**

During January 1992, a survey examining public response to the insert was distributed throughout eight counties in the San Francisco Bay Area; two high risk counties, four medium risk counties and two lower risk counties. Of the 1,309 households surveyed, 806 questionnaires were returned. Fifty-four businesses from the same geographical area were also surveyed. Below is a summary of results relating to the insert itself and public reaction to the contents. The results are reported for the public, with the business (B) and health, safety and welfare organisation (HSW) results reported in parentheses.

### **The Insert**

- 51% respondents had seen the newspaper insert (71% B, 84% HSW)
- Almost everyone who got the insert read it (92% B, 91% HSW)
- 82% found it easy to understand (97% B, 95% HSW)
- 44% reported that they were able to understand the centrefold map
- 23% reported that the brochure had new information (35% B, 30% HSW)
- 30% found it useful for preparing for future quakes (46% B, 38% HSW)
- 44% kept the insert (68% B, 61% HSW)

## Public response

Bay Area residents were found to be selective in remembering information contained in the insert. However their selective recollections suggest that they are making earthquakes a permanent part of local culture.

The table below shows preparedness actions from the insert that were remembered by the respondents along with which actions the respondents reported to have taken before and after receiving the insert.

| Mitigation/Preparedness Action           | Remembered actions that should have been done % | Action taken |               |
|--|---|--------------|---------------|
|  |   | Pre-Insert % | Post Insert % |
| Stored emergency equipment               | 87  | 50           | 81            |
| Stockpile food and water                 | 85  | 44           | 75            |
| Strap water heater                       | 77  | 37           | 52            |
| Rearrange breakable household items      | 54  | 28           | 46            |
| Put wrench by gas shut-off valve         | 71  | 28           | 44            |
| Store hazardous materials safely         | 54  | 29           | 44            |
| Purchase earthquake insurance            | 47  | 27           | 40            |
| Pick an emergency contact person         | 39  | 21           | 32            |
| Learn first aid                          | 38  | 24           | 32            |
| Install flexible piping                  | 42  | 24           | 30            |
| Develop an earthquake plan               | 63  | 18           | 28            |
| Bolt house to foundation                 | 66  | 19           | 24            |
| Learn how to put out fires               | 19  | 17           | 23            |
| Put latches on cabinets                  | 55  | 10           | 16            |
| Brace house walls                        | 31  | 9            | 12            |
| Learn how to assist the elderly/immobile | 16  | 9            | 12            |
| Add lips to shelves                      | 36  | 5            | 8             |
| Learn how to rescue trapped people       | 13  | 6            | 8             |

**Table 2.** Preparedness actions remembered and completed before and after receiving the insert

People listed four major reasons for not doing more to get ready for the next big Bay Area earthquake: 1. lack of money to do more (32%); 2. they were as ready as they were able to get (30%); 3. they simply didn't have time to do more preparation (25%) and; 4. it wouldn't help to do more to get ready (24%). However, 25% reported that

they intended to learn more about what to do; 28% expressed intentions to do more to make their homes safer; and 11% planned on buying earthquake insurance.

### **Organisational response**

Spokespersons in businesses and organisations were asked about varied preparedness actions that enhanced preparedness for their own in-house staff or their organisations ability to perform its role as part of community response to future quake disasters. The actions asked about included planning, training, conducting drills and/or exercises, stockpiling emergency supplies and informing the public about quake preparedness.

After receiving the insert (full tables of results are presented in Appendix 2):

- 40% of the organisations reported updating their emergency plans
- 44% of the organisations reported undertaking training for emergencies
- 26% of the organisations carried out contents protection
- 16% of the organisations carried out structural mitigation
- Only 6% of the organisations further informed the public
- Only 3% took out insurance

### **Conclusions**

This public education strategy worked to increase public and organisational awareness and preparedness. It is of concern though, that only three preparedness measures were adopted by a majority of the public. The greatest increase for the public was seen in the simple preparedness measures: storing emergency equipment and stockpiling food.

The researchers concluded that:

- a newspaper insert works well to reach the public and organisations;
- the document should come from official government sources and scientists;
- the content should explain clearly and specifically:
  - what the risk and probability are,
  - where and when the quake is going to happen,
  - what the effects will be,
  - what people should do before, during and after the quake,
  - where to get more information about it and what to do.

- detailed risk maps based on geological and seismological considerations alone are not well understood by the public;
- the order in which the information is presented is important:
- how to information at the front, science information at the back
- a modular approach is easier for the public to use;
- written documents are not enough:
  - organisations have to be seen to be preparing
  - people need to seek out information on their own, and talk with their friends and neighbours about it

An online, revised version of the insert can be found at:

**<http://quake.wr.usgs.gov/prepare/future/index.html>**

### **New Zealand Fire Service – National Promotion Strategy**

The New Zealand Fire Service's (NZFS) mission is to reduce the incidence and consequences of fire and to provide a professional response to other emergencies (New Zealand Fire Service, 2001). The Service has five goals to achieve by 30 June 2006.

These are to:

- Reduce the total number of fires by 20%;
- Reduce the number of injuries as a result of fire by 50 %;
- Reduce the consequence of fire on the environment and communities
- A 5% increase in the percentage of fires in structures where 80% or more is saved
- Reduce and maintain the avoidable residential structure fire fatality rate per 100,000 population to less than 0.5
- 95% of all wildfires to be contained within 2 hours of being reported.

To achieve this, the NZFS has a developed a national promotion plan for fire safety and public education. The plan recognises the need to focus on resources to promote the fire safe message to at-risk groups.

These are:

- Children, including juvenile fire starters,
- Older adults, specifically isolated, hard to reach elderly,
- People on low incomes,

- People with disabilities,
- Ethnic groups, such as Maori and Pacific Peoples,
- Commercial, industrial and retail occupiers,
- People in rental accommodation,
- Rural property owners.

These groups were identified through an extensive review on improving fire safety knowledge and practices of vulnerable groups (Chalmers, 2000).

### **Public Education Effectiveness of Firewise**

In 1998, a benchmark study that determined public awareness of fire safety issues was conducted. The study has been conducted annually ever since. The key findings from their most recent study (NFO, 2003a) are summarised below.

#### **Awareness**

Spontaneous recall of a fire safety message has increased from 56% in 1999 to 78% in 2003. Those who are more likely to recall a fire safety message are more likely to be female, aged between 25-44 years and have incomes between \$30,000 - \$75,000. Those who do not recall seeing or hearing a fire safety message are significantly more likely to be Maori, age 65 years plus and have an annual income of less than \$20,000. Television is the number one source of fire safety messages, followed by direct Fire Service contact and newspaper. Significantly more New Zealanders are interested in receiving fire safety information through all the 10 mediums. Television is the most preferred medium followed by the radio, pamphlets or brochures in the mail and newspapers.

#### **Action**

Respondents who recalled a fire safety message or piece of advice were asked what action they had taken as a result of the message/advice. The table on the following page summarises the results for the entire sample.

|   | 2001<br>% (n=746) | 2002<br>% (n=700) | 2003<br>% (n=908) |
|---|-------------------|-------------------|-------------------|
| Installed smoke alarms                          | 25                | 29                | 43                |
| Taught others in household to be fire safe      | 9                 | 20                | 39                |
| Kept matches away from children                 | 10                | 21                | 38                |
| Checked the operation of smoke alarms           | 13                | 26                | 36                |
| Do not leave cooking on stove unattended        | 6                 | 14                | 29                |
| Developed an escape plan for household          | 6                 | 16                | 29                |
| Do not leave candles burning unattended         | 6                 | 15                | 28                |
| Do not leave clothes drying close to heating    | 6                 | 13                | 26                |
| Do nightly safety checks                        | 7                 | 14                | 25                |
| Stopped drinking or drinking less while cooking | 5                 | 7                 | 16                |
| Have practised escape plan                      | 3                 | 9                 | 11                |
| Do not smoke in bed                             | 5                 | 7                 | 10                |
| Stopped smoking or smoking less in the house    | 4                 | 5                 | 6                 |
| Have a fire extinguisher                        | -                 | 2                 | 1                 |
| More aware of fire safety                       | -                 | 2                 | -                 |
| <b>Total Action Taken</b>                       | <b>52</b>         | <b>65</b>         | <b>77</b>         |
| No action taken                                 | 48                | 35                | 23                |

**Table 3.** *Actions taken as a result of fire messages*

Encouragingly, the fire safety messages New Zealanders are viewing and/or hearing are working better than before, with the majority of respondents (77%) exposed to a safety message or piece of advice taking some form of action as a result. This is a significant increase on both 2002 (65%) and 2001 (52%), suggesting the current fire safety messages are successfully persuading New Zealanders to alter their behaviour concerning fire safety.

### **Target Groups' Awareness and Action**

Overall, of the five examined at-risk groups low income earners are the group most likely to be affected by fire, largely because: they are less likely to be aware of fire safety messages; have a worse attitude towards fire safety than the other groups; are

less likely to have a smoke alarm installed and are more likely to smoke cigarettes inside (see Table 4.) It appears that this group needs the most attention in terms of promoting fire safety attitudes and behaviours. The other four groups were all found to be relatively fire safe.

|                       | Fire safety message recall 1999 | Fire safety message recall 2003 | Action taken as a result of messages 2001 | Action taken as a result of messages 2003 |
|-----------------------|---------------------------------|---------------------------------|---|---|
| Low income households | 52%                             | 67%                             | 53%                                       | 78%                                       |
| Renters               | 51%                             | 79%                             | 58%                                       | 80%                                       |
| Older single/couple   | 55%                             | 67%                             | 50%                                       | 67%                                       |
| Rural                 | 58%                             | 75%                             | 42%                                       | 80%                                       |
| Minority ethnicity    | 52%                             | 79%                             | 49%                                       | 77%                                       |

**Table 4.** Fire safety message recall and actions taken as a result of messages for 'at-risk' groups

### **How has this change come about?**

The NZFS formed a national safety promotions group comprising communications professionals, fire safety personnel and firefighters to develop public education strategies. The group's aim was to bring about behavioural change and developed a 10 year vision to make fire safety behaviour an active part of the New Zealand culture. The strategy was two-fold – to ensure that New Zealanders accept self-responsibility for fire safe behaviour and establish a fire prevention culture in New Zealand through building a FireWise generation.

The major focus was on educating children who would grow up with good fire safety habits and be the conduit for fire safety information between the Fire Service and their families. The other strategy was to address those most at risk from fire and the risky behaviours identified through research.

One of the key pieces of research conducted was a survey investigating how to get communities to accept greater responsibility for adopting preventative fire safety attitudes and behaviours (CM Research, 2000).

The survey investigated:

- Smoke alarm installation,
- Ownership of other fire safety equipment,
- Escape plans,
- Fire safety behaviour,
- Attitudes to fire safety,
- Relationship between attitudes and risk,
- Responsibility for fire safety,
- Fire safety communication.

A summary of the recommendations made from the CM Research study (2000) is as follows:

- Communications about fire safety must address the attitudes underpinning much of the risk taking and unsafe behaviour;
- Communications about fire safety must chip away at complacency and the pervasive 'it won't happen to me' attitude;
- News stories and television advertising and programmes are instrumental in communicating fire safety messages and changing attitudes toward fire safety messages and influence all demographic groups and segments;
- Communications on fire safety should convey certain messages, e.g. fires are potentially life threatening, having a smoke alarm is not enough, etc;
- In its communication, the NZFS should provide the following specific information, e.g. the most common cause of fires, how to put out different fires, how to call the fire service, etc;
- The Fire Service should consider a catchy slogan(s) to communicate key fire messages;
- Ensure that the communication channels used to inform the public reflect those channels to which at risk groups are most likely to respond;
- Migrants have particular information need and require targeted communications.

For each of these points further, more specific recommendations were provided.

This study, along with fire incident statistics, Fire Service Commission contestable research papers, annual fire awareness survey, communications effectiveness surveys and focus groups was used to shape the public education strategy from

1999 onwards. It would be of benefit for Civil Defence to conduct similar studies before embarking on any public education campaign.

Targeting children may also be a key to NZFS's success in changing behaviours. FireWise is a national school curriculum programme that the NZFS introduced in 2000. The Year 1 and 2 programme is delivered in both English and Maori and consists of kits including a smoke alarm, teacher lesson plan guide, 30 FireWise certificates, 30 dial 111 cards, display photo cards, 30 FireWise Discovery Books, classroom friezes, A3 picture book, classroom activity cut out pages and the story of Maui and Mahuika. The Year 7 and 8 programme is a 14 to 16 hour course designed to teach students actions they can take to prevent fires from occurring, and to teach them fire safety behaviour that could save lives in a fire emergency. The teacher alone can take the programme but it is intended to be supported by a visit from local firefighters.

At the time of researching this report there was no published material available on the effectiveness of the FireWise curriculum, however a study is presently being undertaken. The National Promotion Strategy Plan (2001) does make mention that half of the households with children aged 5-18 reported that their child children had made suggestions about fire safety and that between 40%-60% of these suggestions being implemented. It is assumed that these suggestions are brought home as a result of the FireWise programme.

### **Earthquake Commission's Communication Programme**

The Earthquake Commission has been running various communication campaigns since 1997, with the aim of raising public awareness of the risk of landslide, geothermal activity and earthquake and encouraging mitigating activity. Indeed, the only TV/cinema campaigns run in the last ten years in relation to hazard preparedness are those by the EQC. In early 2001, the *Fix Fasten Forget* campaign was launched, with a revised version highlighting the fact that the risk of earthquakes is greater than people might think airing in 2002. The most recent communication uses a combination of the *Fix Fasten Forget* punchline and the risk message to educate and call the public to take action, along with a non-advertising effort through the circulation of fridge magnets and shopping lists.

## **Communications Programme Effectiveness**

Since 1997 the EQC has been monitoring the effectiveness of its communication programme every quarter. Tables in Appendix 3 provide a summary of the October 2003 survey results (AC Nielsen, 2003) compared with results from the start of the *Fix.Fasten.Forget* campaign and mid way through, or for the last quarter and year, depending on data availability. Key performance indicator targets have been designated for some areas under investigation. Unprompted action questions were used as answers to these and are more likely to be closer to the truth (action leads to better memory recall). A question was also included examining the extent to which that action was undertaken to reduce earthquake damage. Key results are as follows.

### **Awareness/Knowledge**

- The proportion of New Zealanders who perceive themselves as knowledgeable about ways to mitigate earthquake damage has increased significantly despite a substantial drop in advertising over the last quarter. This is thought to be due to the media coverage of the August 2002 Te Anau earthquakes.
- Recent earthquake activity and landslips had little impact on perceived risk among New Zealanders.
- Intention to take action has increased significantly.
- Those who perceive a high level of risk from earthquakes and have not taken action, most commonly mention other priorities and laziness as their reason for not having acted.

### **Actions**

- The reported increase in actions, exceeding the key performance indicators, suggest that the Te Anau earthquakes had an impact on people's actions.
- There was a significant shift in spontaneous mention of having taken any action among the general public, particularly among Quake Zone residents - specifically for taking out insurance and securing general items.
- Securing hot water cylinders/tall furniture, use of closed hooks/Velcro mats, and the placement of breakables on lower shelves were generally taken in a direct effort to reduce or prevent earthquake damage.

- Future intention to take actions also increased significantly among the general public and Quake Zone residents.

## **Discussion**

The three public education campaigns discussed here have all resulted in the public increasing their preparedness/hazard mitigation activities to some extent.

The “The Next Big Earthquake in the Bay Area May Come Sooner Than You Think” insert produced by the USGS in 1990, in response to a recently released earthquake prediction, encouraged the public to prepare for the ‘next big earthquake’. This public education initiative did produce an uptake of preparedness actions in the population that did see the newspaper insert. However, promoters cannot expect these actions be to maintained through a single phase of information/education delivery. Though this pamphlet increased preparedness at the time, it is uncertain how good the public’s knowledge and preparedness is ten years on. Have people maintained their water, food and battery supplies? How many have kept the insert for reference? Is the information still relevant? What have the thousands of new residents to the area received? Luckily for residents of this area it happens that the City of Berkeley is one of FEMA’s ‘Project Impact’ communities (discussed in this Chapter, Section D). So, from possibly as early as 1998, Bay Area residents would have received further information and some may have maintained their level of preparedness.

Another issue with the USGS campaign is the cost-effectiveness of the inserts. Although colour, illustrated, booklet-type pamphlets are preferred by the public (Rohrmann, 2000) and are good to keep for reference, they are expensive to produce, especially when only half of the expected population receive them. In this example, over 500,000 were produced, and only 51% of the target population saw them. When producing something of this scale, dissemination methods should be well researched to make sure the largest population possible will receive the material. A letterbox drop may have cost more, but might have ensured a larger number of people actually saw the booklet, therefore increasing the rate of preparedness in the community.

As an aside, but important note, there seems to be a significant flaw in the data presented in this paper. For example, Mileti and Darlington (1995) reported that only 51% of 806 respondents reported seeing the insert, yet 703 people (87%) were

reported to remember that storing emergency equipment was one of the actions recommended in the insert. They acknowledged that there was a lot of other media about the earthquake prediction at the time, but these results specifically state that the remembered actions were from the insert. This means that only half of the reported number actually carried out preparedness actions, making the insert less effective than it appeared at first.

Although this may not be the best example of an effective public education campaign, the publication itself had very good qualities and would have been served better if (immediately, rather than 8 years later) accompanied by follow-up material or community-based activities. From what is known of the insert, it matched the specifications found by Rorhmann (2000) to be preferred by the public and it contained images showing how to undertake specific preparedness activities, which are useful and effective in motivating people to prepare.

The New Zealand Fire Service runs a very effective public education programme. Over the past three years there has been a significant increase in the uptake of fire safety actions (e.g. installing smoke detectors) and behaviours (e.g. not leaving candles burning unattended) among New Zealanders. Even though there has been this increase, still less than half of the respondents undertake any of these actions and behaviours. These numbers may, however, be adequate for achieving the goals, or further, sustained increase in the uptake of actions and behaviours as a result of their continuing campaign is expected. At the rate of increase seen in the past years, the next year or two should see at least half of the recommended behaviours and actions be carried out by the majority of the population.

The targeted approach of the NZFS' programme may be the key to its success. Children are especially targeted from the 'at-risk' groups as it is noted that educating children not only benefits the children, but at the same time also educates the parents and family, through children taking home the message and wanting to make their home and family fire safe. Using schools as a means of information dissemination is also a way of targeting communication. The general public prefer to receive their fire safety information through television and radio advertising, but delivering through schools also, more specifically, reaches a number of the at-risk groups. Success may be also due to the information having many of Mileti et al.'s, (Mileti & Darlington, 1997; Mileti & Fitzpatrick, 1992; Mileti & O'Brien, 1992) 'best practice' elements for public education; these being information quality (specificity,

consistency and source certainty), frequent delivery of information and provision on information through a number of media. This effective multimedia campaign, however, comes with a price. In 2000/01 the NZFS spent \$22.5 million dollars on public education, increasing to \$25.9 in 2001/02. In extreme contrast, it is worth noting that the monies available at a national level for civil defence public education campaigns are well under \$200,000 per year. Fire is also a common hazard, with its effects being seen every day. Fire is essential to our daily lives for cooking and heating. Everyone has had an experience, or at least knows of someone who has had an experience with fire getting out of control and can see why fire safety actions and behaviours are important. Although the NZFS faces similar barriers to those of CD, the uptake of preparedness for fires will be greater than that for CD emergencies due to their salience and frequency.

EQC, similarly facing the problem of low hazard salience and frequency, has managed to increase the number of people undertaking mitigation actions through the efforts of the *Fix.Fasten.Forget.* campaign. Although a majority of the (sampled) population are not yet undertaking these measures, the EQC has defined 35% as the population percentage they aim for, and this is being well exceeded. For the actions they are primarily concerned with (securing, fastening, bracing), New Zealand levels are comparable to those of California, which is positive considering the resources the US has to promote seismic adjustment adoption compared to New Zealand. EQC has also used a diverse range of media to promote the *Fix.Fasten.Forget* message, however these have been generally restricted to print, cinema and TV, with very little community interaction. Even though changes in the number of people adopting preparedness measures is not increasing as dramatically as that of the NZFS, it does show that basic forms of public education can motivate some people to prepare for low saliency and frequency events.

One point to remember with any study examining the self-reported uptake of action is the likelihood of over-reporting. Results are likely to be tainted by misunderstanding or lack of knowledge of what an effective action is, misreporting, or both. Misreporting may come about when people know that the action is important but feel guilty about not having undertaken the task. High rates of mitigation action reporting led the EQC to conduct home audits to verify that these actions had been done. The audit found that fixing and fastening actions were over reported by up to 90% (Charleston, Cook & Bowering, 2002). The authors did caution that due to the small sample size the

results should not be widely extrapolated, however the results highlight that results consisting of self-reported behaviour should be viewed cautiously.

### **Public Education Documents and Websites**

**<http://earthquakecountry.info/roots/>**

A downloadable version of “Putting Down Roots in Earthquake Country”, which includes a section on “The seven steps on the road to earthquake safety”

**<http://www.fema.gov/areyouready/>**

FEMA’s guide to citizen preparedness

## **C. Social Marketing**

The Ministry of Education, Ministry of Health, Ministry for the Environment, Land Transport Safety Association (LTSA), Alcohol Advisory Council (ALAC), Accident Compensation Corporation (ACC) and the Retirement Commission are all using forms of social marketing to encourage behaviour change among New Zealanders. Te Mana, Quit, SunSmart and Sorted are well known brands from Ministry of Education, Ministry of Health and Retirement Commission’s social marketing strategies. The SunSmart campaign developed by the Health Sponsorship Council (an agency of the Ministry of Health and principal advocate of Social Marketing in New Zealand) and LTSA’s Road Safety Campaign will be reviewed further following a brief overview of social marketing concepts.

### **Introduction to Social Marketing**

The term social marketing was first used by Kotler and Zaltman (1971) to refer to the application of marketing to the solution of social and health problems. Just as marketing has been remarkably successful in encouraging people to drink Coca Cola and wear Nike trainers, it also has the potential to encourage people to adopt behaviours that will benefit their lives.

In brief, Andreasen (1995) has defined social marketing as “the application of commercial marketing technologies to the analysis, planning, execution and evaluation of programmes designed to influence the voluntary behaviour of target audiences in order to improve their personal welfare and that of their society”.

Social Marketing provides a practical framework for achieving behavioural change in relation to a desired social outcome, involving communicating social messages to a specified audience in an appropriate and credible way, so as to influence their thinking and actions, but is not a rigid, prescriptive method for solving social problems.

The core principles of Social Marketing are:

- All strategies begin with the key audience,
- Consumer behaviour is the bottom line,
- Programmes must be cost effective,
- Interventions involve the four p's: price, product, place, promotion,
- Market research is essential to designing, pretesting, and evaluating,
- It draws on transaction/exchange theory,
- It is based on voluntary behaviour exchange within an environment of choice,
- Markets are carefully segmented,
- It acknowledges the competitive environment.

### **The Health Sponsorship Council – SunSmart**

The Health Sponsorship Council (HSC) is a New Zealand based social change agent, marketing important health messages to New Zealanders (Health Sponsorship Council, 2004). They have developed four health brands - Smokefree, Auahi Kore, SunSmart and Bike Wise - which are promoted through media and public relations activities, sponsorships and educational programmes, selected promotions and resources. Ultimately, they seek to influence thinking and action among at-risk audiences.

The HSC's social marketing approach:

- a. complements the legislative, policy, educative and enforcement approaches taken by other health promotion agencies in New Zealand. Commercial sponsorship is utilised as a primary tool for expressing branded health messages;
- b. focuses upon key audiences – teens, pre-teens and Maori;
- c. favours a co-operative approach, working closely with government, businesses and community networks to further the reach of its various programmes;
- d. builds long-term strategies around the brands and their health messages.

## **SunSmart Background**

The aims of the SunSmart promotion are to increase sun safety behaviours among New Zealanders, particularly those with fair skin, with an aim of reducing skin cancer incidence and morbidity. Skin cancer is the most common form of cancer in New Zealand, with nearly 50,000 new cases and around 250 people dying of melanoma a year. Skin cancer costs the New Zealand health system about \$33 million a year. Most of this cost could be prevented, yet skin cancer prevention continues to be a low priority in national health purchasing.

## **The campaign and evaluation procedure**

Over the summer of 2002/2003 the HSC in conjunction with the Cancer Society of New Zealand conducted a SunSmart Communications Campaign (NFO, 2003b) that aimed to:

1. increase awareness and understanding of the serious and unique dangers New Zealanders face from the sun every summer
2. increase the awareness of the importance of using a range of appropriate SunSmart behaviours\* (simultaneously overcoming the misperception that sunscreen is the only protection needed)
3. encourage the uptake of SunSmart behaviours\*

\*SunSmart behaviours: wear protective clothing; wear sunglasses; seek shade; apply sunscreen.

The target audience for the campaign was children aged 0-12 years and their caregivers. The campaign included two television commercials and radio and print advertising that featured Tiger the Prawn promoting SunSmart messages. The first television commercial ran for three weeks in late October – Mid November and the first and second television commercials and advertising ran for four and five weeks, respectively, from mid December to Mid January.

Telephone interviews were conducted with children between 8-12 years (n=62) and their caregivers (n=225) over three time periods in summer in order to track changes in awareness, behaviour and attitudes relating to sun-safety. Surveys were conducted prior to the campaign, between advertising waves and at the conclusion of the campaign.

## Results

### *Caregiver Awareness*

- There is a high awareness of sun-safety issues (~90%), strong agreement with statements about issues (~68%), with no significant change throughout the campaign;
- There is high spontaneous and prompted awareness of sun-safety promotions, which significantly increased over the three time periods (28%→44%→60%);
- Over two-thirds of the care givers recalled seeing either or both Tiger the Prawn advertisements yet only 15 (out of 225) recalled the radio promotions and print promotions;
- There is a high (prompted) awareness amongst care-givers of SunSmart behaviours, however this is mostly awareness of 'generic' behaviours (e.g. 'wear sunscreen') (~87% with no significant change between waves) rather than specific recommended behaviours (e.g. wear SPF 30+ sunscreen, re-apply sunscreen regularly) (~64% with no significant change between waves).

### *Caregiver Behaviours*

Out of the 13 recommended SunSmart behaviours, the behaviours that the caregivers did for themselves, which significantly increased over time, were:

- Always wearing sunglasses (up 12% to 73%);
- Always applying sunscreen thickly (up 13% to 47%);
- Re-application of sunscreen regularly (up 13% to 48%);
- Wearing of broad-spectrum sunscreen (up 15% to 68%);
- Shade seeking between 11am and 4pm (up 10% to 48%).

Out of the 13 recommended SunSmart behaviours, the behaviours that the caregivers did for their children, which significantly increased over time, were:

- Always dressed their children in loose fitting clothes (up 10% to 71% from first to second wave but dropped to 58% from second to third wave);
- Always put sunglasses on their children (up 10% to 32% from first wave to second wave but dropped back to 25% from second to third wave);
- Always put SPF 30+ on their children (up 11% to 81%);
- Applied sunscreen on their children thickly (up 11% to 72%);
- Applied sunscreen on their children regularly (up 9% to 73%);
- Applied broad spectrum sunscreen (up 9% to 77%).

In a comparison of actions performed on self, compared to actions performed on children, caregivers were found significantly more likely to do the majority (11 out of 13) of recommended SunSmart behaviours for their children than for themselves.

#### *Children's Awareness*

Children were asked (unprompted) about things they know they should do and what things they actually do to stop getting sunburnt.

- A majority of children were aware of the advertisements and said they liked them;
- Significantly more children said they should wear sunglasses (up 17% to 41%);
- Significantly more children said they should wear sunscreen (up 33% to 81%);
- Significantly fewer children said they should put on sunscreen before going outside (down 18% to 19%).

#### *Children's Behaviour*

- Fewer children reported wearing hats that shade your face neck and ears (down 21% to 22%);
- Significantly more children reported wearing sunscreen (up 17% to 73%).

### **Campaign Evaluation Conclusions**

- Given the relatively short airtime of the campaign, awareness was high and behaviour changes were evident (although these cannot be solely attributed to the Tiger the Prawn campaign as things like other media campaigns, increasingly warmer weather etc would all contribute to more awareness of and changes in behaviour relating to sun safety).
- Based on the survey findings, some SunSmart Behaviour were not done as often as they should -
  - Children also need to wear sunglasses (not just adults) to protect their eyes from the sun,
  - Applying sunscreen 15-30 minutes before going out in the sun,
  - Replacing wet clothing with dry clothing to avoid getting sunburnt,
  - Sunscreen should be applied thickly.

- While awareness of SunSmart behaviours did increase from wave one to wave three, the specific nature of awareness was not evident, for example saying 'wear sunscreen' increased (and was high) while those saying 'wear SPF 30+ sunscreen' did not change (and was comparatively lower);
- A key area for concern from the research findings is that care-givers tend to be more likely to ensure that their children are being SunSmart than they are themselves. Positively, many children are themselves aware of what should be done to be SunSmart.

### **Resemblance to Social Marketing Model (McDermot Miller Ltd, 2001)**

The HSC focuses on

- Achieving behaviour change, attitude change is means to an end;
- Programmes/promotions are highly targeted e.g. the priority for SunSmart is 12-17 year olds;
- Uses "environmental scan" to assemble and synthesise known information, undertakes new research for missing information and uses this to identify and segment target audiences;
- Uses the behaviour change model;
- Does not promote itself as an organisation (no person in the management structure responsible for this);
- Works closely with other agencies involved in "health promotion" especially Cancer Society and Heart Foundation;
- Does consider the perceived benefits, and costs of changing behaviour and the influence of peer group pressure (e.g. preference to 'be tanned now' or smoking to get peer group approval seen as more important than increased risk of cancer in 20 years). Awareness of the issues is not the social problem, as this has already been achieved, the true aim remains instilling a change of behaviour;
- Produces marketing plans for "Sunsmart," presumably also for other programmes;
- Undertakes Quantitative/Qualitative research to evaluate sponsorship;
- The 'social product' is seen as 'desired behaviour change';
- Regards itself as audience driven;
- Finds out what 'triggers the audience';
- Extensively uses role models e.g. sports coaches of young teams wear Smokefree tracksuits, getting surf lifesavers to be Sunsafe (Cancer Society

building structures on beaches) and Cricket coaches make sure hats and sunscreen are used; and,

- Readjusts the programme to modify social behaviour. For instance, “Sunsafe” knowledge is high in 12-17 year-olds, but they do not often behave in accordance with this, so HSC looks at overcoming the blocks to the change by tailoring and positioning the product to suit the market (e.g., seeks to make clothes in fashionable designs that will be worn).

#### **Divergence from the Social Marketing Model** (McDermot Miller Ltd, 2001)

- Heavy emphasis on promotion of ‘brands’; this is not normally a tool in social marketing - this gives their campaigns a strong resemblance to commercial marketing. But here the brands are very concise statements of the message so this may be justifiably effective.
- It is not clear that the Stages of Change behaviour model is implemented at a detailed level.
- The adoption of the “social marketing” moniker two years ago has not changed their activities profoundly; this may be because the organisation has always had a marketing emphasis anyway.
- Like LTSA’s road safety campaign the project uses an approach developed in Australia.

#### **Land Transport Safety Authority – “Changing the Way We Drive” Road Safety Campaign**

The Land Transport Safety Authority’s (LTSA) Road Safety Campaign is perhaps the largest and longest running campaign in New Zealand to be influenced by the social marketing philosophy. While some (e.g. BRC Marketing & Social Research) consider it to be an example of social marketing, LTSA staff have indicated that the campaign has not specifically been designed and developed as a social marketing campaign. They argue there has been an awareness of Andreasen’s (1995) ideas (see Introduction to Social Marketing), but this is regarded as ‘common sense’ rather than being an important insight or guiding principle (McDermot Miller Ltd, 2001). For the purpose of this of this report, however, the LTSA’s Road Safety Campaign will be considered an example of social marketing.

The following is a summary of the information provided in ‘Changing the way we drive: Facts about the Road Safety Campaign’ (LTSA, 1998) and on the ‘Changing the way we drive’ website (LTSA, 2004).

## **Background**

In 1995 a National Road Safety Plan was devised as a response to the 600 deaths each year on New Zealand Roads and the \$4.1 billion cost of road crashes to society. The deaths resulted mainly from drink-driving, speeding and not wearing safety belts.

As part of the plan, a new Road Safety Package for improving driver behaviour in New Zealand was developed. The package was based substantially on the world's best practice Transport Accident Commission programme successfully developed in Victoria, Australia. The stated objectives of the New Zealand package included saving over a four year period 80 lives, 450 people from serious injuries and 1600 people from minor injuries.

To support the Road Safety Package, the government provided funding of \$12.2 million per year over four years. Of this, \$5.1 million per year was for increased Police enforcement and \$7.1 million per year for publicity. An additional \$1.3 million was allocated per year from 1996/97 for safety belt publicity.

The strategy relies on significantly increased law enforcement supported by hard-hitting, high profile advertising. Its aims are to achieve a widespread change in drivers attitudes and behaviour, both in the short and the long term, and an absolute drop in the road toll.

## **The Strategy**

### *Police Enforcement*

Police activity is a vital component in reducing the road toll. Publicity informs and encourages compliance, with the reality of enforcement adding further motivation to change driving habits. Enforcement strategies are based on targeting risk, visible deterrence, covert enforcement and increased ticketing. The Police have significantly increased their annual road safety effort, especially in enforcement. The effort included:

- The administration of 1.66 million compulsory breath tests in 2003;
- Issuing of 500,000 traffic offence and infringement notices for excessive speed annually (20% increase);

- Issuing of 35,000 safety belt infringements annually (34% increase);
- Issuing of 940,000 traffic offence and infringement notices annually (36% increase).

### *Advertising*

Television is considered the most effective way to deliver strong, emotive and realistic road safety messages to New Zealand homes. However, a wide range of additional advertising media is also used. All publicity, at both national and community levels, is tailored for the target audience and designed to support national advertising campaigns which in turn supports Police enforcement activity.

The advertising is designed to target the appropriate 'at risk' group for each road safety issue. Before the advertisements were produced, crash data and attitudinal research were used in the development of a brief that defined the target audience and the issues to be addressed. Using the brief, several different concepts were developed and then tested with representatives of the target audience to determine the most effective means of making an impact.

Much of the road safety advertising uses emotion and shock to deliver messages to audiences in a way that leaves drivers thinking "it could be me" or "I don't want to do that to someone". The advertising is designed to engage core human fears and vulnerabilities. To achieve this, the use of absolute realism is vital. The social marketing aspect of the advertising is to make sure the message shows the meaningful benefits that outweigh the costs of driver behaviour change. An example of this was to change the message – targeting specific at risk groups such as young Maori drink drivers in rural areas - about the consequences of drink driving from loss of license if they get caught, to telling them they will kill their mates if they continue to drink drive.

### **Did the campaign work?**

#### *Effects on the road toll*

Between 1995 and 2001, changes in the road toll were dramatic:

- 513 fewer people were killed on the roads in the seven years;
- Independent evaluation of the programme in 1998 attributed casualty reductions (after the first two years) of over 1000 fatalities and over 1000 serious injuries to the Enforcement and Advertising campaign;

- The total number of people injured in road crashes fell by 27%;
- The number of people hospitalised as a result of road crashes fell 5%;
- The number of fatal or serious injury crashes involving a driver affected by alcohol fell 46%;
- The percentage of late night drivers who were over the legal alcohol limit fell by 1.7%;
- The number of reported injury crashes involving drivers travelling at excessive speed fell 29%;
- 39% fewer young drivers (aged 15 - 24 years) were involved in fatal or serious injury crashes.

#### *Changes in attitudes and behaviour*

In the same period, surveys revealed significant shifts in general attitudes to road safety:

- The percentage of male drivers who admitted driving while slightly intoxicated fell from 41% to 32%;
- The percentage of people who thought there was only a low risk of being caught drink-driving fell by 6% to 43%;
- The percentage of people who thought that speeding drivers were 'unlucky' to be caught fell by 5% to 27%;
- The percentage of people who said they enjoyed driving fast on the open road decreased by 4% to 38%;
- The percentage of people who thought there was only a low risk of being caught speeding on the road fell by 4% to 39%.

#### *Reduced social costs*

The social cost of road crashes fell from \$4.1 billion in 1995 to \$3.4 billion in 2001. 'Social cost' is defined as the value of life based on 'willingness to pay'. To achieve this estimation, people are surveyed to determine how much they would pay to reduce the chances of death, injury (both short term and long term) and the pain, grief and suffering resulting from road crashes. The total amount people are willing to pay, together with medical, legal and property costs, gives the cost of road crashes in dollar terms to society as a whole.

## **From here**

In 2002, the Road Safety 2010 Strategy was devised, setting a goal to decrease road trauma to no more than 300 fatalities and 4,500 hospitalisations by 2010. For this, the Government has provided funding of \$12.5 million per year. This funding supports and justifies a \$140 million Police strategic enforcement programme. The funding is divided over the speed, alcohol, and safety belt campaigns, and a new driver behaviour campaign (give way and intersections). These include campaigns for specific groups, including Maori and Pacific Islanders and women.

## **Resemblance to Social Marketing Model (McDermot Miller Ltd, 2001)**

The LTSA Road Safety Campaign:

- Is a planned programme that has been running since 1995 with strategic purpose.
- Directs advertisements to targeted specific audience segments e.g. youth, rural drinkers and so on. The targets are identified through quantitative research, and the effectiveness of concepts, messages and advertisements gauged through qualitative research while advertisements are in production and in quantitative research after they go to air.
- Stresses researching the market with research entering the process at many points:
  - Analysis of accident statistics to identify market/audience segments with negative behaviour;
  - Analysis of infringements including speeding, drink driving and seatbelt offences;
  - Annual attitude survey consisting of 1645 face to face interviews;
  - Advertising/message concept tests in focus groups consisting of the target adopter group;
  - Further focus group testing during production of advertisements; and,
  - Research to test reach/frequency/effectiveness of mass communication messages.
- Derives the target group for each message/advertisement from this research.
- Recognises the Andreasen-type stages of behavioural change model.
- Clearly separates the road safety campaign from any self-promotion by the LTSA or Traffic Police. The organisation is not promoted; research to measure attitudes and behaviour in the market does not include perceptions of LTSA or the Police.

### **Divergence from the Social Marketing Model** (McDermot Miller Ltd, 2001)

The use of law enforcement to help achieve the desired outcomes is unusual practice in social marketing. Achievement of positive social outcomes by means of the law is discussed in the social marketing literature (e.g. Rothschild 1999), however LTSA's use of enforcement contrasts with the social marketing model approach that seeks voluntary behaviour change. There is no doubt that the law is a valid instrument but its important role in the road safety campaign is a departure from 'text book' application of social marketing.

- The messages communicated through the mass media help to change attitudes, to move the audience from 'pre-contemplation' to 'contemplation' phases of behaviour change. But the push to move to the 'action' and then 'maintenance' stages – to change behaviour and maintain it relies to some degree on enforcement.
- There is a high reliance on advertising designed to create fear or other unpleasant emotions in the audience (more recent advertisements have had a more positive tone). This is not necessarily incompatible with social marketing and the merits of such approaches are debated in the literature. The LTSA position is that, whatever the aesthetic or theoretical arguments, their approach works. The road toll has reduced and other road safety indicators shifted in a positive direction since the campaign began in 1995; a study commissioned by the LTSA credited the campaign with this improvement.
- In the social marketing ideal there is a high level of integration or co-ordination of communication or product position through mass communication and personal/community channels. The LTSA does use community channels, it has community managers, it has regional organisations etc. But there does not seem to be much connection between the two levels.
- The mass communication campaign is backed by enforcement. But this heavy emphasis on mass communication is the norm in most avowedly social marketing campaigns in developed countries.
- Seems to be some confusion as to what "the product" is, whether this is the outcomes i.e. the reduced toll, or the messages/slogans that are being communicated.
- The Road Safety campaign is based very closely on a Victorian model, developed and first implemented in Victoria around 1989. There does not appear to have been social marketing underlying the Victorian approach, it

does not have the appearance of a pure application of strategic social marketing planning/programme development. Rather it appears to have been a pragmatic and tough approach combining shocking advertising with rigorous enforcement.

## **Discussion**

Is social marketing any different to public education? The elements that are supposed to set social marketing campaigns apart from public education campaigns are: recognition of the behaviour change model, audience and campaign research (both before and after promotions), highly targeted promotions and no self-promotion of the organisation undertaking the campaign. As stated in the introduction social marketing 'involves communicating social messages to a specified audience in an appropriate and credible way, so as to influence their thinking and actions...' Any good public education programme, like that of the NZFS, fulfils most of these requirements. The NZFS does not recognise the behaviour change model in its strategy, nor do they create a separate brand to make fire safety more appealing. Masking the organisation responsible for the provision of education/information in this case would be detrimental, as the public would then not know where to directly get information or support from, which is especially important for emergency service providers. The NZFS, however, consistently researches their audience to monitor their characteristics and preferences, and to evaluate the effectiveness of their programme. They also run highly targeted programmes.

Neither of the social marketing campaigns reviewed here strictly adhere to the social marketing principles (nor do many others out there, which claim to be social marketing initiatives). Both the SunSmart and the LTSA campaigns are New Zealand adapted versions of campaigns designed by similar organisations in Australia, which do not appear to be the works of social marketing.

So does social marketing work? Looking at these two examples, yes and no. Yes, in that it has achieved an increase in people undertaking safety behaviours, which is its main aim. No, as the change reported from the SunSmart campaign has not been particularly different to that achieved by the reviewed public education campaigns. LTSA has achieved a marked difference, however, this is partly due to law enforcement, which does not fit with social marketing's voluntary behaviour change approach. LTSA's success in lowering the road toll also comes from engineered

solutions. Part of the funding designated to reducing the road toll is allocated to roadwork (realigning roads, adding barriers, resurfacing etc.). Engineering solutions, however, are not always possible, practical or affordable for those trying to promote behaviour change (e.g. increase preparedness) and are definitely not part of the social marketing philosophy.

There is one aspect of LTSA's programme research however, which is not specific to social marketing, and has not been discussed in any of the reviewed public education programmes, which should be considered when scoping any campaign. This is quantifying the benefits of the campaign. To obtain funding for campaigns, we need to show that by spending \$x now, it will save \$y in the long run. It is a funding incentive when the monetary benefits of a campaign are shown to outweigh the costs. With respect to Civil Defence, it needs to be shown that by spending \$x on ways to get people to prepare (either through estimating a x% uptake from public education or actually providing goods/services to people) the government will save \$y in the event of a disaster. Communicating this information to the public on a more relevant scale (e.g. \$10 strapping a water heater will save \$100 water damage) may encourage some to prepare, but hazard salience and frequency, and expecting insurance or government handouts to cover the cost are known barriers to action.

Social marketing is really a form of public education. Specifically, public education that is researched, evaluated and targeted. How social marketing supposedly develops a programme may be different, but it still generally uses the same means of disseminating the information (i.e. through TV advertising etc.) It may use 'sponsorship' and brand products, clothing etc, in the case of SunSmart and Smokefree, but this is only advertising, without actually providing educational information. There will be many who disagree with this point, but until campaigns that claim to use social marketing techniques adhere to social marketing principles and show significant differences in behaviour change to contemporary public education initiatives, they remain a 'fashionable' version of public education campaigns.

## **D. Community Development Programmes**

The New Zealand Ministry of Health, U.S. Federal Emergency Management Agency (FEMA), National Society for Earthquake Technology in Nepal and NZFS Northland have all used community-based approaches to convey their message and increase community resilience. The Ministry of Health, through their public health units, are

endeavouring to improve community health through increasing the social capital of the community. FEMA's Disaster Resistant Communities Initiative aim is to reduce the personal hardships and financial costs of disasters through increasing community preparedness, rather than focusing on individual preparedness. Full community support, through the cooperation of councils, businesses and the public, is needed to facilitate community preparedness and subsequently promotes community resilience. The National Society for Earthquake Technology in Nepal has implemented the Kathmandu Valley School Earthquake Safety Program (KVSESP), which sets to seismically strengthen school buildings using community resources. Schools have been chosen as they are a recognised heart of communities. The NZFS Northland's Te Kotahitanga project uses local people, with the support of many local organisations, to increase fire safety (through education and smoke alarm installation) in remote and isolated houses in Northland, East Coast and Bay of Plenty communities.

### **Ministry of Health - Community Development/Action** (Duigan et al., 2003)

The New Zealand Public Health and Disability Act 2000 places considerable emphasis on the need for publicly funded health services to forge strong links with the communities they serve. The Act endorses a view that involvement of communities in health and health services is important, and that health planning must directly incorporate the needs and priorities of communities.

The New Zealand Health Strategy (NZHS) (Minister of Health, 2000) also emphasises the increased profile of communities within health planning. The NZHS singles out several health issues that are considered to be closely linked to adverse social and economic circumstances: domestic and family violence, alcohol and substance abuse and suicide. The new District Health Boards (DHBs) are required, under the New Zealand Public Health and Disability legislation, to address these priority areas. The DHBs are unable to address these complex issues comprehensively without taking into account the social context in which they arise. Community involvement approaches and in particular, community development and community action, are a way forward.

### **Community Development / Community Action**

Community action is focused on health and other outcomes related to particular health topics (e.g., alcohol, injury, or nutrition), while community development is

focused on a set of health and social wellbeing outcomes set by a community itself. Community action is working in and with a community to achieve health outcomes for specific health topics and works to achieve these outcomes directly. It also fosters community development, as skills learnt in community action regarding specific topics can be applied to other issues of concern to the community. Community development also increases the likelihood that community action may take place. Community development in contrast to community action, seeks to work primarily by taking a community as a whole from its present state, and addressing priority issues for the community. As a result, it is believed that health and other sector outcomes will be improved.

The major difference between the objectives for community development and those for community action is that, for community action, the objectives will be focused on a specific health-related topic (e.g., injury prevention or alcohol).

A comparison of the ways of working in and with communities (community action and community development) is outlined in the table on the following page.

The overall outcomes community development/action seek to achieve are:

- relevant groups within the community being linked and working together for the good of the community;
- improved perception by those outside the community (e.g. other institutions and agencies) that the needs of the community and their views on solutions are important;
- strengthened partnerships between the community and different levels of government;
- more resources flowing into the community and/or better use of resources within the community;
- increased community capacity through an empowered community, with increased skills and resources available for a community to be able to take effective action on issues it is interested in;
- improved health and social wellbeing outcomes.

|  | Community action  | Community development  |
|--|---|--|
| <b>Needs Assessment</b>                    | Need usually defined in regard to specific health topics (e.g. injury, alcohol)   | Broader needs assessment process usually undertaken  |
| Positive objectives                        | Core set of given objectives on a specific health topic; other related community-specific objectives can be added   | Wide range of potential objectives related to improvement in community's health and social wellbeing, defined by the local community                                     |
| Project strategies                         | Starts with strategies for which there is evidence of effectiveness, adapts these to the particular community and adds new strategies   | Strategies usually determined by the community itself  |
| Collaboration with wider non-health sector | In developing strategies and implementation, key sector stakeholders and media advocacy are particularly important  | In developing objectives, as well as strategies and implementation, needs to be fully integrated with other community development activity taking place in the community |
| <b>Intervention logic</b>                  | Working in and with a community on specific health topic(s) to achieve specific health outcomes. Intervention logic is based on evidence for specific interventions and involves implementation of policy at local levels | Working in and with a community will lead to a more 'developed' community, which will result in improved health and social wellbeing outcomes                            |
| Relationship to national policy frameworks | Often undertaken under a specific national policy (e.g. health priority topics)   | May or may not be linked to national policy, as objectives are selected by the community   |
| Community capacity building                | Involvement in specific community action project can lead to community members being involved in other community issues   | Builds capacity of community members and empowers them to be involved in a whole range of community issues   |

**Table 5.** Comparison of community action and community development

## **Examples of Community Projects**

### *Pasifika Healthcare's gardening projects - Addressing poverty and healthy lifestyles*

Pasifika Healthcare is a Pacific health care provider that provides general practice and health promotion services in West Auckland. Its community health team works with early childhood education centres, churches and other community groups around various issues including nutrition. Pasifika is currently working with a local Maori provider and a Union Health Clinic to establish a Public Health Organisation.

Pasifika's gardening projects began in Pacific early childhood centres as a way of teaching children about healthy eating. The community health team worked with eight centres to plant vegetable and flower gardens for the children. Because families were so enthusiastic about the gardens the team decided to use gardening more widely. It is seen as a way to encourage healthy eating, as well dealing with some of the poverty issues Pacific families often face.

Many Pacific people eat food that is too high in fat. However, providing health education by itself will not bring about changes if people cannot afford healthy vegetables. Some Pacific people find it a struggle to provide enough food for their families, especially if they are large families. Vegetables are often an expensive luxury that families cannot afford.

To encourage Pacific people to take up gardening, Pasifika Healthcare established a yearly gardening competition. Participants have to grow at least five types of vegetables, as well as flowers. Each year prizes are given for the best gardens. (One trophy is the spade Helen Clarke used to turn the first sod of the new local hospital.) Last year 98 people entered the competition. Not only do people get affordable, healthy food for their families, but also they get exercise, social contact and pride in their achievements. Pasifika Healthcare's gardening projects have developed important community resources using a very small budget and building on goodwill.

### *Improving housing in Otara*

The Otara ward of Manukau City was developed in the early 1950s as a major state housing suburb. It is an area with an ethnically diverse population where there is considerable poverty but a strong community identity.

In late 1998 a community 'think-tank' was held to examine Otara's housing problems and suggest solutions. This identified a number of housing problems in Otara. One of the solutions that arose from this process was a campaign to provide Otara residents with clear information about housing matters that affect their health and well-being. The campaigns involved recruiting a team of mature Otara residents of mixed ethnic backgrounds to carry out door-to-door visits. They were called 'ambassadors' and were trained to provide advice on such matters as controlling insects, rats and mice, disposal of rubbish, combating moisture and mould, fire safety, benefit entitlements and tenancy matters. Housing New Zealand, Work and Income New Zealand (WINZ), Manukau City Council, NZ Fire Service, Otara Health and the Community Employment Group provided the resources.

7,331 houses were visited and interviews carried out or information given at 58 percent of these. In addition over 600 rat and mice bait stations were laid, fire alarms were fitted in 450 houses and nearly 300 referrals made to other agencies (including Housing New Zealand, WINZ, Manukau City Council and a budgeting service).

An evaluation found that 99 percent of households who were interviewed by ambassadors found the information supplied to be helpful or very helpful, and 63 percent spontaneously made positive comments about the campaign. An additional benefit of the campaigns has been providing employment and work skills to a group of people who had been unemployed for some time. Following two successful campaigns, Manukau City Council agreed to fund two environmental community health workers to continue the work on a permanent basis.

### **What evidence is there that community development/action works?**

Evaluation of community-based programmes is difficult as they usually have long time frames, take place in extensive settings, often change their objectives and strategies as they evolve and share similar objectives to other projects taking place. Reviews of community development projects in New Zealand and overseas have identified the following processes being consistently achieved in community initiatives:

- increased community awareness of and interest in the issue;
- improved linkages between organisations, resulting in coordinated activities and strategic direction;
- involvement of new actors and new solutions;

- bringing in new resources and pooling existing resource (information, skills and money);
- modification of services/institutional change to meet local needs.

While there have not been many evaluations that directly show community development improving health, there is evidence for the pathways through which this is likely to occur - for example through an increase in levels of personal trust and social connectedness, civic participation and trust in public institutions.

### **Further information/resources**

An extensive list of New Zealand and international community development/action resources can be found in Appendix 5 of the Community Project Indicators Framework (Duigan et al., 2003).

### **FEMA Disaster Resistant Communities Initiative – Project Impact**

In 1995, America's Federal Emergency Management Agency (FEMA) launched a new national effort to encourage state and local adoption of mitigation policies and programmes in an attempt to reduce escalating disaster relief and recovery costs. The effort, known as the 'National Mitigation Strategy', was developed in response to growing catastrophic losses from natural disaster events including the Loma Prieta and Northridge Earthquakes, Hurricanes Hugo and Andrew, and the Midwest Floods.

In 1996, a set of meetings between local and state emergency managers, representatives from local government, the insurance industry, the business community and other key constituencies were held. These meetings led to the development of a new programme, originally known as the Disaster Resistant Communities Initiative, which was later renamed Project Impact.

Unlike other federal mitigation initiatives that provided mitigation funding to communities that had previously experienced a disaster, Project Impact introduced the concept of pre-disaster mitigation and made the concept an important element in federal loss-reduction efforts. Project Impact was also designed to give local communities fairly wide latitude in deciding what mitigation goals they would pursue and how, rather than a programme managed through strict guidelines and tight regulation. The intent of the programme was to establish a wide variety of community-based initiatives to address mitigation issues deemed important by the

communities and to encourage the development of innovative solutions to hazard-related problems. In its efforts to foster local community initiative and involvement, FEMA worked directly with participating communities, particularly during the initial pilot phase of Project Impact.

Although communities were actively encouraged to develop their own strategies for reducing disaster losses, FEMA did outline general goals and objectives for the programme. These overall goals were:

1. To build community partnerships.
2. To identify hazards and community vulnerability.
3. To prioritise risk reduction actions.
4. To develop communication strategies and to educate the public about Project Impact and disaster mitigation more broadly.

In Project Impact communities, government agencies, businesses, voluntary organizations and individuals come together in a partnership to assess their community's vulnerabilities and work to protect families, homes, businesses and communities from disasters – to make their community more disaster-resistant.

The following is a summary of the activities and key issues collated from the Project Impact Community Progress Reports (Disaster Research Center, 2001, 2002a, 2002b; Emergency Management Institute, 1998).

### **Examples of Pilot Programmes**

1. Neighbourhood Training – CERT and local variations (e.g., CORE, SDART)  
FEMA has promoted the Community Emergency Response Team (CERT) concept since 1994, resulting in teams being established in hundreds of communities. CERT training promotes a partnering effort between emergency services and the people that they serve. The goal is for emergency personnel to train members of neighbourhoods, community organisations, or workplaces in basic response skills. CERT members are then integrated into the emergency response capability for their area. Each CERT member completes 20 hours of training on disaster preparedness, basic disaster medical operations, fire safety, light search and rescue and other essential topics. The training also includes a disaster simulation in which participants practice skills they learned throughout the course. In the event of an emergency, CERT members can provide immediate assistance to victims, assist in organizing

spontaneous volunteers at a disaster site and provide critical support to first responders. CERT members maintain and refine their skills by participating in exercises and activities, as well as attending supplemental training programmes and volunteering for projects to improve community emergency preparedness.

### *Neighbourhood training programmes*

Suggested ways of getting the public interested in disaster preparedness training and keeping them involved are:

- Work with groups that represent your target audience,
- Keep participants talking, solving problems,
- Create incentives,
- Be visible,
- Link with established groups, programmes and events,
- Keep the information flowing,
- Emphasize collaboration, not just individual preparedness.

Many areas have found that the interest in the course exceeds the programme's capacity and once the programme is underway there is no problem in maintaining interest in the neighbourhoods. In recognition of this, in 2003, the U.S. Department of Homeland Security (FEMA) granted \$19 million dollars for CERT training. Funding grants ranged from \$1.5 million dollars in California, to Wyoming receiving \$160,000.

### 2. Mitigation Services for Senior Citizens – Project Springbreak

The Oakland Office of Emergency Services teamed with CARD (Collaborating Agencies Respond to Disaster), the Oakland Housing Authority, and the Corporation for National Service's Americorps programme to provide disaster education and mitigation services to senior citizens in the inner city. The effort was supported by FEMA and held in conjunction with similar programmes around the country. The project recruited 150 high school and college students from Americorps, and trained them in home mitigation methods such as how to secure shelving and furniture to wall studs. Over a two week period the students conducted mitigation projects in 155 senior citizens' homes. Each senior received a disaster supplies kit as well. Numerous agencies, businesses and voluntary organisations worked together to make the project a success. There was a problem with the seniors not wanting strangers in their homes, but with each project they hoped to build the trust needed to include seniors in preparedness education. Partnerships established during the programme are represented in Table 6.

## Project Impact Activities

Activities that Project Impact communities engage in are classified in terms of the four main project objectives: risk/vulnerability assessment, mitigation, partnerships and public education. Over two years the 17 Project Impact communities have completed 129 activities, had 265 activities initiated by the community and still ongoing, decided not to pursue 5 and planned 83 activities for the future. The ongoing activities were primarily public education and mitigation followed by risk assessment and partnership building. Most of the activities completed were risk assessment, mitigation and public education, with considerably fewer partnership activities completed. Table 7 on page 74 on gives examples of the risk assessment, mitigation, partnership and public education activities that are being undertaken or have been completed.

| <b><u>Community and voluntary organizations</u></b>  | <b><u>Activities</u></b>   |
|--|--|
| Youth volunteers   | Conducted mitigation projects in senior's homes  |
| Americorps   | Project coordination , recruitment, training   |
| CARD   | Provided non-structural hazard mitigation training and on-site building coordination   |
| The American Red Cross   | Meals and on-site project coordination   |
| Spanish Speaking Citizens Foundation, Habitat for Humanity, Retired Senior Volunteer Program, Conservation Corps | Provided guidance in working with special populations                                  |
| <b><u>Government agencies</u></b>  |  |
| Oakland Emergency Management Board, Oakland Office of Emergency Services   | Organization and partnership development, state workers served as technical advisors   |
| Oakland Housing Authority  | Identified residents who needed assistance, made appointments, provided training space |
| California Office of Emergency Services, FEMA  | Maps of vulnerable areas, promotion and outreach assistance                            |
| <b><u>Business partners (\$8000 in savings in the purchase of materials and supply kits)</u></b>                 |  |
| Home Depot, Earthquake Outlet, Earthquake Protective Services, Kinkos  | Provided tools, materials, office supplies and training                                |
| LAI Insurance Agency   | Advised on liability insurance issues  |
| Mc Donalds, Noah's Bagels  | Donated meals and snacks for workers   |
| Cellular One   | Provided use of communications equipment   |
| Tenant and Owner Development Corporation   | Loaned earthquake training videos  |
| NASA/AMES  | Produced a video of the project  |
| Oakland A's, Signet Theatres   | Gifts for volunteers   |

**Table 6.** Partnerships established and activities conducted during Project Springbreak

| <b>Risk Assessment and Planning Activities</b>  |  |
|---|--|
| <p><b>Inventory:</b></p> <p>Existing mitigation activities</p> <p>At risk structures and hazardous buildings</p> <p>Resources</p> <p>Community's housing and building stock</p> <p>And map all residences subjected to repetitive loss</p> <p>Critical data maintained on community systems</p> <p><b>Develop:</b></p> <p>Feasible multi-hazard programme components</p> <p>Long-term mitigation plans</p> <p>Conceptual disaster resistant prototype for minor structural and non-structural retrofit of homes and businesses</p> <p>Actions to further strengthen the capability of the community's GIS to aid further decision making</p> <p>Building inspection checklist</p> | <p><b>Conduct:</b></p> <p>Business impact analysis</p> <p>Socio-economic vulnerability analysis</p> <p>Hazardous materials vulnerability analysis</p> <p>Generator capability assessment</p> <p>Site visits for school retrofit assessments</p> <p>Risk assessment of vulnerable infrastructure</p> <p><b>Select:</b></p> <p>Target buildings for development of mitigation implementation strategy</p> <p>Target population groups for development of mitigation implementation strategy</p> <p><b>Identify:</b></p> <p>Non-structural hazards that can be removed to reduce potential danger</p> <p>Technical and financial assistance and incentives to implement loss reduction projects</p> |
| <b>Mitigation Activities</b>  |  |
| <ul style="list-style-type: none"> <li>▪ Accept, screen and approve loan/grant applications</li> <li>▪ Remove non-structural hazards from classrooms</li> <li>▪ Clean up and maintain streams</li> <li>▪ Elevate the utilities, appliances and furnaces in homes damaged by floods</li> <li>▪ Elevate repetitive loss structures</li> <li>▪ Retrofit critical facilities such as fire stations</li> <li>▪ Temporary shelters for animals</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Tool lending library ( to seismically retrofit homes)</li> <li>▪ Strengthen or establish land use regulations and building codes</li> <li>▪ Develop criteria for inspections on retrofitted homes</li> <li>▪ Acquire flood-damaged structures</li> <li>▪ Elevate low roadways</li> <li>▪ Low interest loans from banks for hazard mitigation</li> <li>▪ Power generator for regional airport runways</li> </ul>   |
| <b>Partnership Activities</b>   |  |
| <p>Establish:</p> <ul style="list-style-type: none"> <li>▪ Partnership agreements with the Mayor's Partnership Council</li> <li>▪ Partnership agreements with the task forces on business and industry</li> <li>▪ Mitigation acquisition flood control group</li> <li>▪ A group to develop and implement local mitigation strategy</li> <li>▪ A mentoring programme between large and small businesses</li> <li>▪ A link between businesses and emergency operations centre</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Work with businesses to establish an employee education/assistance programme</li> <li>▪ Develop and implement a business recovery alliance</li> <li>▪ Identify incentives for partners participating in Project Impact</li> <li>▪ Develop strategies for expanding membership</li> <li>▪ Approach utility and transportation organizations regarding possible cost share arrangement for mitigation efforts</li> <li>▪ Identify and increase funding sources for mitigation</li> </ul>  |

| Public Information and Education Activities  |   |
|--|---|
| <ul style="list-style-type: none"> <li>▪ Disaster-resistant home and business retrofit training</li> <li>▪ Long-term strategic all hazards public awareness programme</li> <li>▪ Children’s education task force</li> <li>▪ Senior citizen education task force</li> <li>▪ Hurricane, flood, or earthquake preparedness week</li> <li>▪ All hazards mitigation library for citizens</li> <li>▪ Market the benefits of retrofitted homes</li> <li>▪ Target educational activities to non-English speakers</li> <li>▪ On-line information</li> <li>▪ Markers/images of previous flooding events and high risk areas</li> </ul> | <ul style="list-style-type: none"> <li>▪ Train community retrofit workforce</li> <li>▪ Create incentive plans for businesses</li> <li>▪ Develop mitigation model houses or other buildings</li> <li>▪ Determine education and training needs for the community and partners</li> <li>▪ Determine the types of technical and in-kind assistance required to meet the training and education requirements</li> <li>▪ Provide resource packet for homeowners</li> <li>▪ Hold seminars to inform and organise all affected segments of the community</li> </ul> |

**Table 7.** Activities undertaken by Project Impact communities

### Building Partnerships

Partnerships provide important resources to an initiative as well as opportunities to educate both the private sector and the general public about disasters and mitigation measures. Pilot communities have overwhelmingly stressed the importance of developing an active range of partners. Partnerships may already be active within a community but developing relationships with new partners is also essential. Pilot communities have indicated that partnerships provide many key resources to the Project Impact initiative, these being: expertise, time, in-kind donations, personnel, money and a sense of unity within the initiative. The resources most commonly provided required the least amount of financial investment from the partners (time, expertise and personnel).

Large corporations have been found to be valuable partners as they are an important source of support in terms of volunteering time, contributing in-kind donations and providing assistance to projects. Smaller, community-based businesses represent the most significant partnership sector in the pilot communities; however building these partnerships is difficult due to the business partner’s lack of time and resources. Smaller businesses have also been found to be less interested in overall workplace disaster preparedness, due to both time and financial constraints (Dahlhamer and D’Souza, 1997). In addition to ‘conventional’ partner types, establishing relationships with groups representing vulnerable populations (the

elderly, low-income populations, day care centres, hospices, physically or mentally challenged segments of the population, ethnic minorities, the homeless and women's shelters) is also important.

### **Sustaining Momentum**

The communities have found a variety of techniques to be effective in keeping Project Impact in the news and perceived as a vital organisation. Increasing awareness of the initiative helps to gain support from the general public and can be achieved through education strategies such as hazard related expositions and disaster fairs, community television and education outreach programmes. Assistance from federal and state agencies is also crucial in sustaining momentum.

Communities have also found that successful demonstrations of legislated mitigation measures (e.g., houses not raised above base flood level being flooded) provides an effective selling point for disaster preparedness, mitigation and the Project Impact initiative in general.

### **Benefits and Challenges**

Communities have derived many benefits from Project Impact, but at the same time they continue to struggle with significant challenges, many of which arise because of the very nature of Project Impact as a community-based initiative.

#### *Benefits*

- Project Impact has helped communities leverage resources from numerous groups and in a variety of forms;
- Project Impact has helped communities understand their risks and plan accordingly;
- Project Impact has helped reduce damage in project communities impacted by disaster and is poised to help reduce losses in future events:
  - At least two communities have experienced a disaster in which strategies taken as a result of Project Impact mitigated the losses suffered by community residents and improvements in community preparedness resulted in minimized damage to the built environment and to vulnerable segments of the community;
- Project Impact has aided education and outreach efforts;
- Project Impact helps build partnerships, foster teamwork, and bridge community efforts.

### *Challenges*

- Communities are frustrated with bureaucratic requirements and inconsistencies.
- Communities experienced difficulty determining how funds should be allocated.
- In implementing Project Impact, communities must contend with intergovernmental tensions.
- Turnover in the Project Impact Coordinator position or lack of a full time Project Impact Coordinator delayed activities.
- Communities recommended that more guidance should be provided by FEMA
- Communities experience difficulty in sustaining momentum.
- Changes in partnerships necessitate repeated recruitment efforts.
- Some partners oppose specific mitigation efforts, which deters them from participating in the overall initiative.
- Some communities are struggling to keep their elected officials focused on mitigation.
- Project Impact organizers must find a balance between inundating their partners and encouraging activity.
- While certain activities may succeed in some jurisdictions, other areas do not necessarily have the capacities to carry out similar projects.
- Communities must identify sources of long-term funding.

Project Impact communities are still on a learning curve with respect to how best to implement the philosophy of community-based pre-event loss reduction. While communities have reported small successes – some of which have saved lives and property as a direct result of the initiative – many of the benefits of their mitigation actions cannot be assessed until after a disaster strikes. Not all communities have demonstrated the same commitment to sustaining the initiative of fostering long-term partnerships. There is concern about the possible demise of the programme on a national level and the impact that move would have on funding, resources, access to expertise, and guidance. Project Impact Communities have to decide how they want to proceed, determine how to adapt when the federal money is spent, discover whether their initiatives can survive a change in federal administration and find out if the past years have generated enough local support and established appropriate management structures and strategies to sustain future mitigation efforts.

## **National Society for Earthquake Technology (NSET) – Kathmandu Valley School Earthquake Safety Program (KVSESP)**

(Bothara, Dixit, Nakarmi, Pradanang, & Thapa, 2002)

The Kathmandu Valley Earthquake Risk Management Project implemented by NSET was developed with the intention of working with the community to improve seismic safety. Originally, the project targeted hospitals, as they are vital to a community, both before and after an earthquake. However as hospitals are not a central (physical and emotional) part of a community and as many bureaucratic problems arose, another key community structure had to be found. It was realised that schools are central to communities and working with schools had less bureaucratic restraints, thus the Kathmandu Valley School Earthquake Safety Program (KVSESP) was developed.

School buildings in Nepal are highly vulnerable to any future earthquake due to their construction as very few incorporate earthquake resistant features. Over 66% of the school buildings are likely to collapse if the valley experiences MSK intensity IX shaking. Shaking during school hours could kill more than 29,000 students and teachers.

In time of a disaster schools can provide temporary shelter, medical clinics and other functions. Functioning schools provide a feeling of normalcy to a community. The psychological impact of a disaster on a community may be increased in the event of a school collapse due to the associated losses - children, families and the heart of the community.

### **The Programme**

The KVSESP is considered a path to a safer community, with the greater goal of introducing seismic safety culture. Schools are particularly receptive to earthquake safety programmes and are used as a platform for awareness raising, introducing seismic safety at the community level and technology transfer. The physical strengthening of a school also provides a model for domestic building construction.

The NSET begins by consulting with the local community and school board about the project. Meetings are held in the community to educate the public about the earthquake risk and the earthquake-retrofitting project. NSET then provides technical

training and logistical support to local craftsmen. Traditional artisans are targeted as they generally come from the local community, play a vital role in the construction activity and the community relies on them heavily for all type of advice. Although many of them are illiterate and none of them have any formal training, they provide overall technical and organisational support.

Throughout the retrofitting project the community learns and teaches each other about earthquake safety. Some members of the community see that earthquake safety is achievable through the school project and choose to apply it in their own homes or construction projects. This results in safer schools, safer homes, the building of social capital through the use of local resources and an earthquake educated community. These measures provide for the preservation of a sense of community and make for an earthquake prepared community, in turn producing a more resilient community.

### Hassles, Opportunities and Conclusions

The NSET identified a number of hassles and opportunities throughout the KVSESP and these are listed below.

| Hassles  | Opportunities   |
|--|---|
| <ul style="list-style-type: none"> <li>▪ Lack of manpower with earthquake-resistant construction skills</li> <li>▪ Few opportunities for mid-career tradesmen to update their knowledge</li> <li>▪ Limited monetary resources</li> <li>▪ Systems to control professionals, standardise professional ethics and accept personal liability do not exist</li> <li>▪ The Nepal Building Code Development Project and the Building Act have not been implemented</li> <li>▪ Formal education and trainees do not recognise informal/non-engineered construction materials and skills</li> <li>▪ Information on seismic resistance technology for both new and old construction methods exists but is not widely disseminated</li> </ul> | <ul style="list-style-type: none"> <li>▪ Retrofitting is a cost effective option</li> <li>▪ Involving the local community as a major stakeholder has a positive impact on the community</li> <li>▪ Introducing seismic safety into schools makes the student/local community aware of risks</li> <li>▪ Artisans can act as messengers, passing on the knowledge and skills to owner builders</li> <li>▪ The building code is ready for use and encompasses both formal and informal construction</li> <li>▪ Engineering colleges and polytechnics are eager to have courses on earthquake-resistant design and construction</li> <li>▪ The Nepalese government is constructing school buildings as part of specific projects</li> <li>▪ International organisations that support school building must make sure that all of the schools they fund should incorporate earthquake resistance</li> </ul> |

**Table 8.** Hassles and opportunities identified in the KVSEP programme

The conclusions NSET has drawn from this project are: 1) no radical change in building safety is possible, as it would cause unfavourable repercussions on overall construction activity; 2) long-term training programmes are needed for the artisans as well as the introduction of programmes for professional designers; 3) that schools play a vital role in the transfer of technology, dissemination of information, mason training etc., as they are places of common interest and they draw a large population; and 4) involving the community means more sustainable work in the long term.

The Kathmandu Valley School Earthquake Safety Program shows that even with a lack of resources communities can be made more structurally and psychologically resilient through the use of schools.

### **New Zealand Fire Service – Te Kotahitanga Project**

Between 1997 and June 2001, twelve people were killed in fires in Northland, nine of them being children. This tragedy was the catalyst for implementing the Te Kotahitanga Project. The project aims to improve fire safety in remote / isolated communities and reduce fire fatalities. Members of these communities are at high fire risk as they tend to live in makeshift housing, use lighting and heating systems that are not fire safe - open fires and candles - are isolated from their neighbours, and fire services are too far away.

The project involves ambassadors visiting households and providing the members with fire safety education (teaching about correct fire safe behaviours, making escape plans etc.) and fitting smoke detectors if not already present. The ambassadors are local people with local knowledge and do not have any previous fire education experience. The project's success is due to its use of local people, the face-to-face approach, the fact that it provides positive benefits for all (households, community and ambassadors) and most importantly, the support of a diverse range of stakeholders.

Stakeholders are the New Zealand Fire Service (NZFS), Housing New Zealand Corporation (HNZC), Work and Income New Zealand (WINZ), ACC, People Potential, Local Government, Iwi and the communities of Northland, the East Coast and Bay of Plenty. The fire safety ambassadors are employed through WINZ, HNZC and ACC to provide resources and training, People Potential provide training and coordinators for the project and overall, the NZFS implements the project.

Kotahitanga, meaning unity, togetherness, co-operation, and accord, therefore, was the appropriate name for the project.

The project has seen:

- 26,123 people receive fire safety advice;
- 11,828 houses visited and escape plans developed;
- 46,143 smoke alarms installed; as well as;
- 75% of the ambassadors go on to full time study or employment;
- People Potential provide on-going personal development programme at no cost to ambassadors e.g. computer skills.

## **Discussion**

The community development projects described above show that community capacity building is achieved through working in and with communities. Rather than trying to tackle all the possible ways to increase a community's resilience at a time, spreading resources wide and thin, these projects have focused on community specific issues and groups, resulting in an effective high quality outcome. Project success in each case has relied upon:

1. increasing community awareness and interest in the issue;
2. building partnerships between community groups, government agencies, local businesses and educational institutions;
3. obtaining and pooling resources (knowledge, skill and money).

FEMA's Project Impact initiative is the grandest of the community development projects, but this doesn't make it the most effective. Many U.S. towns and cities are now being made disaster-resistant through on going programmes, but the heavy reliance on government funding could see these collapse if this funding was pulled (which has been mentioned as a possibility). With the generous amount of funding given to the communities comes the problem of how best to spend the money. Money is just given to the communities rather than the money being held in grants for specific community projects. The communities are also expected to continuously develop and complete projects, working on more than one at a time and over long periods of time. By stretching resources in this manner the result is likely to be less effective. Tension is created when stakeholders have to decide where best to allocate funding, which projects should be started or finished and when people lose interest and drop out of the project. Community development projects are probably

better run as discrete projects that are headed by a core group, with stakeholders that can come and go bringing fresh resources to each project.

The basis of a successful community development project is targeting a specific group in the community, whether it is the primary 'at-risk' group or the group central to the community. Resources are then concentrated in a way to maximise benefit to the overall community. The Kathmandu Valley Earthquake Risk Management Project met success when they chose to use schools as their target group. Schools are central to communities all over the world. Schools in themselves are communities, but have influence on the wider geographic community and other community groups, through their children, teachers and staff. Projects designed to build community resilience through schools, such as the KVSESP, work because people recognise the need to protect children. Physically preparing schools is one way to increase community resilience - children will be safer, shelter and services available for evacuees, the school is likely to re-open sooner, re-instating daily routine and people working together on the project develop a greater sense of community. Using school resources for other community projects is another way. Schools already have partnerships with governments, community groups and businesses and support from the general public, which can be used to develop and implement projects for 'at-risk' groups. Information sharing is the other way - children who are taught about what to do to prepare and how to respond will take this information home and share it with their parents, siblings, grandparents, neighbours etc., reinforcing their knowledge and encouraging those close to them to become prepared.

Community projects are generally 'engineering solutions'. The Ministry of Health's community development projects saw the installation of gardens, primarily to encourage Pacific Islanders to eat healthily. The other project, similar to that of NZFS' Te Kotahitanga project, used local people to make homes healthier and safer by providing education as well as installing smoke detectors, rat and mice baits etc. Obviously, public information and education are necessary as they are used to create awareness and interest in the issues and the project, however, dissemination of this information is not the entire project. Engineering solutions can be the best solutions. They are not feasible as a universal solution, but when targeted at the right population, they have the optimal overall effect. For example, not only did the gardening project provide healthy, affordable food for Pacific Islander families, but it also got people out exercising, gave them social contact and a task to take pride in

and earn community recognition. The Te Kotahitanga Project made 25,000 homes potentially safer, but also saw locals trained and employed, and organisations benefit and more willing to participate in further community projects. Overall, good community development projects generate even more opportunities and benefits for the community than originally desired while providing advantages for all stakeholders.

## **E. Psychological Preparedness Education**

As mentioned in the earlier review of psychological findings, people who use problem-focused coping strategies are found to be more resilient (experience less traumatic symptoms) than those who use emotion-focused coping strategies. However, little psychological education is incorporated into any strategy of public education or community resilience building.

It has been shown that anxiety in the face of an impending hazard threat 'gets in the way' of adequate preparedness and that being able to anticipate, recognise and manage such anxiety and other emotional responses to a hazard threat enhances successful coping, promotes more adequate preparedness and ensures that preparedness measures are reinforced with people experiencing stress reduction and increased competence in an emergency situation' (Morrissey & Reser, 2003).

The following is a summary of 'Evaluating the effectiveness of psychological preparedness advice in community cyclone preparedness materials' (Morrissey & Reser, 2003) and 'Awareness, Endurance, Recovery' (Morrissey & Reser, 2000).

### **Awareness, Endurance, Recovery**

Recognising the lack of and need for psychological preparedness education Morrissey and Reser developed "Awareness, Endurance, Recovery (AER): Psychological Preparedness for Natural Disaster Warnings and Natural Disaster". AER is a programme designed for individuals, families and communities who may experience natural disasters or warning situations, members of the community who are vulnerable to adverse stress reactions and community leaders and groups involved in the provision of services relating to disasters and relief.

The programme was written to be delivered by community leaders for distribution to the general community. The course, intended to be delivered over a six-hour period, covers a progression of topics:

- Pre-disaster – The Warning Stage:
  - Why be psychologically prepared,
  - Recognising feelings,
  - Understanding thoughts about disaster,
  - Understanding our behaviours and actions before and during disaster preparation.
- Coping During the Natural Disaster or Warning Event:
  - Identifying stressful feelings and reactions,
  - Managing stressful feelings and reactions,
  - Coping with a real threat or severe warning,
  - Helping others to cope.
- After the Disaster Event – Recovery:
  - Checking how we coped,
  - Can we be better prepared next time,
  - Coping with losses and damage – taking stock.

A 'warnings stage' was incorporated due to the nature of natural hazards. For example, in the event of a cyclone, a warning of the impending threat may last some days and an actual disaster may not occur. Nevertheless, many people will experience some type of stress, whilst others can be lulled into complacency or denial. In the case of a hazard that has little or no warning, like earthquakes, this section can be quickly reviewed or left out.

The psycho-education content material was derived from "Stress Inoculation Theory" (Meichenbaum, 1988). Stress Inoculation Theory (SIT) is a well-researched emotion management strategy and cognitive behavioural procedure, which enhances individuals' ability to anticipate, identify and cope with stressful situations and stress-induced emotional responses.

Overall, the aims of the programme are to:

- Increase the community's awareness of psychological processes involved in preparing for possible disaster situations;
- Enhance a community's ability to cope with the psychological effects of a natural hazard event;

- Reduce the psychological distress, injury, death and longer-term mental health consequences, which may be associated with a disaster;

## Effectiveness of the programme

### The survey

This psychological preparedness intervention was trialed in Cairns during the 1996/97 cyclone season. During the 'pre-season' in mid December, households were surveyed, with half of the selected households receiving a copy of the psychological preparedness guide (PPG), thus providing an intervention and a control group. The guide was what participants would receive when attending an AER programme.

Respondents completed their post-event questionnaire approximately three months after the pre-season survey and following six days of a very large cyclone system (Cyclone Justin) sitting off the coast of Cairns with attendant watches and warnings. A control group was only administered a post-event survey.

### The results

|  | Intervention Group<br>(n=131) | Control Group<br>(n=141) |
|--|-------------------------------|--------------------------|
| Change in physical preparedness scores (pre-season to post Justin) | 4.15*                         | 1.77*                    |
| How confident at being able to cope                                | 5.07*                         | 4.54*                    |
| How possible to exercise personal control                          | 4.83                          | 4.61                     |
| How concerned about another threat                                 | 3.05*                         | 3.47*                    |
| Anticipate feelings  | 4.08*                         | 3.23*                    |
| Identify feelings  | 4.08*                         | 3.24*                    |
| Manage feelings  | 5.05                          | 4.81                     |
| The PPG was somewhat or very useful                                | 74%                           |                          |
| The PPG provide some or many new strategies                        | 61.5%                         |                          |
| The PPG provided no new strategies                                 | 20%                           |                          |

\* denotes statistical significance  $p=0.01$

**Table 9.** Psychological Preparedness Guide survey results

Respondents were reasonably prepared at the beginning of the cyclone season with residents in the intervention group reporting a slightly higher level of physical preparedness than those in the control group at the beginning of the season. Levels of physical preparedness were significantly improved at the time of the post-event survey, particularly in the intervention group. The control group's post-event

preparedness score was lower than the intervention group's but higher than the pre-test control group. This diminished physical preparedness of the control group may be due to threat salience and provision of preparedness information (the pre-season survey) being delivered without psychological advice.

Intervention respondents reported: feeling significantly more confident about being able to cope with another serious cyclone situation; that they felt it was more possible to exercise personal control over the impact of a cyclone and that they were experiencing less concern about the threat of another cyclone.

The respondents who used the guide reported being better able to anticipate how they would feel and that they were better able identify and manage particular feelings. A majority of the intervention group respondents felt that the guide was useful, with over a third finding it 'very useful'. Two-thirds reported that the guide helped them feel less anxious during the recent cyclone.

### **Does it work for everybody?**

The stress inoculation psychological preparedness material might be less effective for individuals characterised by moderate to high chronic anxiety and/or prior and traumatic disaster experience (Lazarus, 1984; Myers, 1994; Russell, Goltz, & Bourque, 1995). Chronically anxious or previously traumatised individuals might need more assistance than that which a brief self-instruction guide on managing emotions is able to provide. The stress induction component of an SIT intervention may heighten anxiety for those 'normally high anxious' people to an extent that self-directed cognitive behavioural management techniques may not be sufficient.

The study found that trait anxiety, coping style and prior cyclone experience influenced physical and psychological preparedness. The results confirmed that lower physical preparedness scores were found for highly anxious individuals, for those who often use avoidant coping strategies and for those with prior traumatic experience. The results were very similar for psychological preparedness, with the highest psychological preparedness scores being for those low anxious, active coping, and no prior experience groups.

### **Conclusions**

The Awareness, Endurance, Recovery psychological preparedness guide was seen to have a significant positive impact on most respondent's physical and psychological

preparedness. Through providing people with psychological information designed to enhance their ability to anticipate, identify and cope with stressful situations, a more physically prepared and psychologically robust community will result in the event of a hazard warning or event. It is of note that the study concludes that heightening the salience and need for preparedness without providing psychological advice may be neutralising or counterproductive to individual and community preparedness.

## **Discussion**

Some psychological preparedness information should certainly be incorporated into educational material on natural hazard preparedness, not only for its ability to increase preparedness but to help people mentally prepare and know what to do to recover from the impact of a natural hazard. Psychological information should not just be provided after a natural hazard event, as it is now, and should be just as vital as physical preparedness information.

Delivery of this information is probably not best disseminated through a six hour group programme as suggested by the authors. Maybe, in the case of training-the-trainer or in businesses and organisations this may be the best way, but not for the general public. The public are unlikely to turn up to any public meetings or focus groups unless they are discussing issues of major importance to them (or there is some incentive provided). It is unlikely that people would be keen to turn up to a meeting that teaches them about 'disaster feelings', as this would require them admitting a disaster is likely to happen, that they will need help coping with it and that they have a spare six hours.

The information would be better delivered initially in a similar fashion to that used in the study, that is, in an individual, written form. A psychological preparedness guide could be produced separately, but including some information in a physical preparedness guide with reference to further information would be a way of introducing the concept to the public. For example, in Civil Defence's "Will you cope when disaster strikes?" brochure, a page devoted to psychological coping, covering such issues as what reactions are normal before, during and following a natural hazard event, how to manage these emotions, how to help children etc., could be included. Psychological preparedness guides should also be available, and if interest were shown, group meetings could be held (possibly for community groups). In any event a page or two would at least give people some idea of how to psychologically prepare for a hazard event.

## Chapter Four

### Summary and Recommendations

This study has set out to determine how best to go about getting the public to be aware of, take action in regard to and prepare for hazard events. Such behaviour will help support the creation of more resilient communities by increasing individual and community ability to plan for and recover from hazard events. To plan for a hazard event, or to begin the recovery process after a disaster, individuals and communities must have the knowledge and resources and take action to support themselves. However, New Zealanders at present are disinclined to prepare for civil defence emergencies despite their general knowledge (awareness) of the hazards and risk and the potential disruption to everyday life. This awareness needs to be turned into action. To develop the best possible approach to achieve this, understanding of the psychology of preparedness must be ascertained and the range of preparedness motivation strategies examined.

This study has identified reasons why people don't prepare, identified the variables that predict preparedness of individuals and households, examined the effectiveness and preference of communication types, and explored public education, social marketing, community development and psychological preparedness programmes. The key findings from each of these are listed below.

Suggestions are made on how to undertake an effective programme, which will generate action and help support the creation of more resilient communities.

#### **Empirically supported barriers to action – why people don't prepare:**

- Risk perception – “This river won't flood for another 100 years”
- Optimistic bias – “It's never going to happen to me”
- Response efficacy – “There are more important things to think about”
- Outcome expectancy – “No amount of preparedness will help”
- Normalisation bias – “Wellington has earthquakes all the time, and I survived those”
- External locus of control – “Disasters are an Act of God”
- Transfer of responsibility – “Civil Defence will be there to help me”

## **Predictors of preparedness**

There are many variables, some more consistent than others, predicting individual and households level of preparedness that have been identified in the literature.

These are:

- Risk perception and optimistic bias
- Response efficacy and outcome expectancy
- Beliefs and coping
- Demographic characteristics
- Hazard proximity
- Previous experience
- Information seeking and critical awareness
- Behavioural intentions
- Perceived protection responsibility
- Risk communication/Public education
- Sense of community

Through testing variables that are consistently found to predict preparedness for natural hazards (which coincide with factors found to predict the adoption of preventative health behaviours) Paton et al., (2003) have designed a model that predicts preparedness, consequently identifying the key variables that lead to and hinder people adopting preparedness measures. How these variables influence each other and contribute to the preparedness process was identified and strategies to facilitate their change were suggested.

- Precursor variables (factors that initially motivate people to prepare)
  - Risk perception – communication/public education
  - Critical awareness – empowerment
  - Anxiety – communication/psychological intervention
- Intention formation variables
  - Outcome expectancy – communication/empowerment
  - Self-efficacy – empowerment
  - Problem-focused coping – empowerment
- Moderator variables
  - Time – communication
  - Proposed: Sense of community and response efficacy

The work of Paton et al. (2003) highlights that a range of strategies need to be used in public education. In addition to communication strategies, it is also necessary to

include work on a community level, fostering community development and empowerment as well as psychological interventions.

### **Communication type and content**

In general it has been found that people tend to prepare more when information is specific, comes through many channels, via various media, is consistent and frequently disseminated. However, to design an effective communication/education programme it is also essential to know what the best ways to reach the public are, ie. which media is preferred, where people seek information from and what content should be included. Studies on information preferences and effectiveness have shown that:

- People generally like to receive their information from the television, pamphlets, and the newspaper
- When seeking information, people prefer to retrieve it from other sources such as the internet and friends and family
- Brochures/pamphlets are the preferred reference medium
- Different demographic groups have different access and preference of information media
- Brochures are best preferred as small, colour, illustrated booklets
- Disaster damage images may increase recall of the information/education campaign but have no effect, or negative effects, on preparedness. Positive, instructional images should be used in publications that are intended to create action.

### **Case studies**

A range of public education, social marketing and community development strategies, as well as a psychological intervention, were examined for their ability to turn awareness into action. The key findings and themes from each type of strategy are listed below.

### **Current Civil Defence Public Education Resources**

Although the effectiveness of the current civil defence resources is not yet known, it is worthwhile knowing what resources are available.

- National resources

- “Will you cope when disaster strikes” brochure
  - “Know What it Takes” national radio campaign
  - Yellow pages advertising
  - Sponsorship
  - A central widely promoted website ([www.civildefence.govt.nz](http://www.civildefence.govt.nz))
- Regional and local resources
  - School, community and business programmes which mostly provide information through face-to-face meetings, brochures, posters, videos and kits
  - Community programmes using radio advertising and volunteers
  - Business programmes aimed at providing provide help with business continuity planning

### **Public education**

The public education campaigns examined were the USGS “The Next Big Earthquake May Come Sooner Than You Think” newspaper insert; the New Zealand Fire Service’s campaign and the Earthquake Commission’s Communication Programme. The key findings from the three campaigns are:

- Public education can, to some extent, encourage people to prepare, so should not be totally disregarded
- Booklets giving specific information and illustrations are very useful
- At-risk groups should be targeted
- Information should be disseminated in as many ways as feasible (media type and sources)
- Campaigns should not be ‘one-offs’
- Self-reported action levels are often misreported, results from self-reported action surveys should be interpreted with care

### **Social marketing**

The two social marketing campaigns investigated were the Health Sponsorship Council’s ‘SunSmart’ campaign; and the LTSA’s “Changing the Way We Drive” campaign. In conclusion, social marketing:

- Is a form of public education

- Strongly advocates audience research and programme targeting and evaluation. These are not unique to social marketing but the idea that these should always be undertaken as part of a campaign is noteworthy.
- Campaigns don't consistently adhere to social marketing philosophy, eg. using extensive branding or law to enforce actions, so it cannot be said that 'social marketing' alone is the reason for the action or behaviour change
- Does not achieve markedly different results much to those of 'public education' campaigns

### **Community Development Programmes**

The Ministry of Health's Community Development/Action initiative; FEMA's Project Impact; NSET's Kathmandu Valley School Earthquake Safety Programme; and NZFS Te Kotahitanga; were the community development programmes examined.

The key points highlighted by these programmes are:

- Community development programmes effectively increase preparedness and foster a sense of community through empowering the community
- Partnerships with governments, organisations, local businesses, community groups etc, are needed to make community development programmes work
- Programmes should be targeted at at-risk groups or groups with strong community influence eg. schools, to have optimal benefit
- It is better to carry out 'discrete' projects rather than undertaking many at a time in the same location
- Engineering solutions, when properly targeted, achieve optimal levels of action.

### **Psychological Preparedness**

Morrissey and Reser's (2000) "Awareness, Endurance, Recovery" psychological preparedness intervention was included in the study because of the recognised need to address the link between it and psychological issues preparedness. This form of psychological intervention is the only one known of its kind for natural hazards.

Psychological preparedness advice:

- Reduces anxiety, making people more likely to prepare
- Helps people cope during the event as people know what emotions/reactions to expect and how to deal with them
- Improves recovery as coping skills are improved
- Should be included in public education/community development strategies

## **Recommendations**

A collation of the main findings and recommendations are provided in the following table. The table is first divided into the three agents of change recommended as the key predictors of preparedness by Paton et al. (2003). Each of these needs to be part of a 'strategy' that aims to increase community preparedness, in order to influence each predictor and to ultimately result in action. The recommendations are not specific for each predictor, but provide a guide to what should be done or included in each part (public education, empowerment or psychological intervention) of the initiative. These recommendations come from the findings of the reviews of communication types and the case studies.

| <b>Change Agent</b><br>(what is the agent being used to effect change) | <b>Predictors</b><br>(type of behaviour or situations that predict action)   | <b>Action recommendations</b><br>(actions that should be undertaken to help achieve desired response)  |
|--|--|--|
| <b>Communication / Public Education</b>                                | <b>Risk perception</b> <ul style="list-style-type: none"> <li>▪ perceived threat from a hazard</li> <li>▪ Anxiety</li> <li>▪ extent to which events and information about events triggers anxiety</li> <li>▪ Outcome expectancy</li> <li>▪ perceptions of whether personal actions will effectively mitigate or reduce a problem</li> <li>▪ Time</li> <li>▪ beliefs regarding the timing of the next hazard event</li> </ul> | <ul style="list-style-type: none"> <li>▪ Target at-risk groups</li> <li>▪ Use preferred media types</li> <li>▪ Use many media types</li> <li>▪ Use many credible sources</li> <li>▪ Information should be provided frequently</li> <li>▪ Booklets should have specific information and instructional pictures</li> <li>▪ Provide different sources for information searching</li> <li>▪ Don't expect miracles, have a performance target</li> <li>▪ Monitor audiences and programme effectiveness</li> </ul> |

|  |   |   |
|--|---|---|
| <p><b>Community Development/ Empowerment</b></p> | <p><b>Critical Awareness</b></p> <ul style="list-style-type: none"> <li>▪ frequency of thinking and talking about hazards</li> </ul> <p><b>Outcome expectancy</b></p> <p><b>Self-efficacy</b></p> <ul style="list-style-type: none"> <li>▪ personal beliefs regarding capacity to act effectively</li> <li>▪ Problem-focused coping</li> <li>▪ choosing action directed at changing a situation</li> </ul> <p><b>(Sense of community)</b></p> <ul style="list-style-type: none"> <li>▪ feelings of belonging and attachment for people and places</li> </ul> <p><b>(Response efficacy)</b></p> <ul style="list-style-type: none"> <li>▪ capabilities and resources held by individuals</li> </ul> | <ul style="list-style-type: none"> <li>▪ Through community development programmes</li> <li>▪ Target at-risk groups or groups with community influence eg. schools</li> <li>▪ Identify group needs</li> <li>▪ Programmes should be carried out one at a time</li> <li>▪ Programmes should have a specific objective</li> <li>▪ Ongoing programme evaluation should take place</li> </ul> |
| <p><b>Psychological Intervention</b></p>         | <p><b>Anxiety</b></p>   | <ul style="list-style-type: none"> <li>▪ Use similar material to the Psychological Preparedness Guide</li> <li>▪ Include in public education and community development programmes</li> </ul>  |

A strategy developed using these recommendations could address problems the CDEM Groups are presently facing with their public education, namely the complex range of hazards, limited resourcing, low levels of community preparedness, competition for public attention and programme evaluation as outlined in the Introduction. Suggestions are provided under the headings as described in the Introduction.

### **Complex hazardscape**

- The strategy should be delivered at a local/community level, with regions or local authorities focusing on hazards particular to their area

### **Limited resourcing**

- Regions with similar hazards should pool/share information/education resources rather than trying to invent new resources for themselves. This ensures consistency and quality of information
- Getting a number of sources (eg. Council, CRI's, community groups) to provide information increases effectiveness

### **Low levels of community preparedness**

- Information needs to be provided in multiple sources in ways that everyone can access it or prefers to receive it
- Community projects build community structures and connections to community networks
- At-risk households should be targeted
- Placing responsibility on communities to carry out their own projects will endorse a sense of personal acceptance and responsibility

### **Competition**

- Collaborating with other agencies/organisations/groups will improve resources and make the strategy more noticeable

### **Effectiveness of programmes**

- There is a need for access to skills and ability to support programme evaluations. Such research can be costly for individual CDEM groups to undertake. This could be mitigated by MCDEM coordinating a collaborative approach at a national level to conduct surveys and data collection and carry out programme evaluations, thus providing additional skills and resources to CDEM Groups and lowering costs

There are also a number of general recommendations that have been determined. These are offered as suggestions for work to be coordinated by the Ministry of Civil Defence & Emergency Management in support of the activities of the CDEM Groups.

### **Survey for awareness**

- As stated there is not a clear understanding of the levels of awareness in the community with regard to hazard risks and emergency preparedness that should be undertaken. Although various awareness studies have taken place these have never been collated and are usually in relation to a single issue (such as tsunami awareness). A broad survey of awareness would enable and understanding of gaps in community knowledge as well as providing a base to measure future education initiatives against.
- As an addition to this the Ministry could look at developing an understanding of what constitutes an effective public education initiative and how these are measured. The Ministry could also offer funding support for the assessment of existing and future education initiatives.

### **Development of templates for information series**

- As a national body the Ministry is well placed to coordinate the development of fact and information sheets on hazards and emergency preparedness and provide these as templates to CDEM Groups. Such information series are already provided by a number of councils within various CDEM Groups, however distribution varies and they do not contain standardised messages. Using the best-practice information presented in Chapter Two on design and content of written information would enable the creation of nationally standardised information sheets that could be provided in a number of locations such as community centres, council publications, local newspapers, through new immigrant groups and the like. While the Ministry has already initiated a move to offer these resources for the sector on their website, there is a need for more to be done in this area.

### **Community development initiatives**

There are a number of community development initiatives that the Ministry (and the National Public Education Group) could investigate.

- A partnership with EQC or a similar agency focused on technical interventions in an at-risk-community would raise the profile of involved agencies as well as

encouraging the community to take a responsibility and interest in the safety of their area. Such a project might look at issues such as developing a family plan for all the households in a small rural community prone to flooding, or at retrofitting earthquake bracing on chimneys (as per EQC's current pilot work).

- Partnerships with schools to ensure the school built environment is as safe as possible, and possibly look at fitting of high-capacity water tanks and generators so that schools can re-open if essential facilities are damaged. This kind of programme could be developed by the Ministry and support provided from a national level to CDEM Groups who might wish to take part in such a programme. This would also build on current civil defence relationships with schools.

Education strategies in CDEM can assist with building a resilient New Zealand through moving away from strictly public education based strategies to those that also include community development projects and psychological interventions. Although CDEM Groups are responsible for the CDEM education for their region, this should not stop them from collaborating and pooling ideas and resources to create the more effective education and information resources that are needed. Networking with other agencies, institutions and businesses is also essential and such a level of cooperation is the most guaranteed way to create effective outcomes for CDEM. Building a resilient New Zealand is a broad responsibility which will require new initiatives, broad strategies and cooperation among all interested parties to achieve the desired outcomes of action taken by individuals to prepare for disasters.

### **Developing a preparedness motivation campaign for a community – author's notes**

Getting people to prepare for Civil Defence Emergencies cannot be achieved through public education alone. A combination of public education, community empowerment and psychological intervention is required to effectively get people to participate in preparedness activities. It is also a process, which takes time, rather than being able to deliver all three components at once and immediately expecting change.

### **The process**

The first step in the process is to understand the primary barriers that prevent people from preparing and variables can predict preparedness. These are:

- risk perception

- outcome expectancy
- self-efficacy
- problem-focused coping
- critical awareness
- anxiety
- response efficacy
- sense of community

In the first stage of a campaign, risk perception, critical awareness and anxiety are the variables that need to be addressed as they are the ones to initially motivate people to prepare. The intention formation variables of outcome expectancy, self-efficacy and problem-focused coping then need to be focused upon in the second stage of the campaign. After targeting these variables, people should have good intentions to prepare, but can still be hindered by the moderating variables such as perceived timing of the next hazard event, sense of community and response efficacy, so these variables are to be addressed in the third stage of the campaign. The table below shows the stage of the process/campaign, associated variables and the basic strategy that should be applied to each variable.

| <b>Stage of Process</b> | <b>Variable</b>  | <b>Basic Strategy</b>  |
|-------------------------|--|--|
| Precursor               | Risk perception<br><br>Critical Awareness<br><br>Anxiety                     | Communication<br><br>Empowerment<br><br>Communication<br><br>Psychological<br>intervention |
| Intention Formation     | Outcome expectancy<br><br>Self-efficacy<br><br>Problem-focused Coping        | Communication<br><br>Empowerment<br><br>Empowerment<br><br>Empowerment                     |
| Moderator               | Timing of hazard activity<br><br>Sense of community<br><br>Response Efficacy | Communication<br><br>Empowerment<br><br>Empowerment  |

### **The strategies**

Before a preparedness motivation campaign can be undertaken, the audience needs to be researched. The audience's current level of awareness and preparedness

needs to be investigated, along with defining at-risk groups and determining particular group's beliefs, needs and preferences. This will provide baseline data to monitor the effectiveness of the campaign and enable a better targeted approach.

Communication is the public education component of the campaign. Recommended actions are:

- Target at-risk groups
- Use preferred media types
- Use many media types
- Use many credible sources
- Information should be provided frequently
- Booklets with specific information and instructional pictures
- Provide different sources for information searching
- Don't expect miracles, have a performance target
- Monitor audiences and programme effectiveness

The empowerment component of a campaign is achieved through community development programmes. Recommendations for these are:

- Target at-risk groups or groups with community influence e.g. schools
- Identify group needs
- Programmes should be carried out one at a time
- Programmes should have a specific objective
- Ongoing programme evaluation

Psychological intervention is the other component of a preparedness motivation campaign. Interventions should be incorporated into public education and community development programmes and contain similar material to that contained in the Psychological Preparedness Guide.

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## Appendix One

### Images in disaster preparedness presentations: Results Tables

| Preparedness Measures                         | Tornado |           | Flood   |           | Earthquake |           |
|---|---------|-----------|---------|-----------|------------|-----------|
|   | Damage  | No Damage | Damage  | No Damage | Damage     | No Damage |
| <b>Those who remembered the presentations</b> | (n=372) | (n=166)   | (n=657) | (n=385)   | (n=475)    | (n=321)   |
| Supplies in one place                         | 15.6%   | 54.8%     | 9.4%    | 47.8%     | 28.4%      | 47.4%     |
| Have supplies, not all in one place           | 22%     | 25.3%     | 14.8%   | 30.4%     | 30.5%      | 32.7%     |
| Include food                                  | 6.7%    | 36.1%     | 5.8%    | 28.3%     | 23.8%      | 33.3%     |
| Include water                                 | 5.4%    | 34.9%     | 3.8%    | 24.4%     | 23.2%      | 31.8%     |
| <b>All contacted attendees</b>                | (n=460) | (n=345)   | (n=886) | (n=956)   | (n=555)    | (n=544)   |
| <i>Recall Factor</i>                          | 80.9%   | 48.1%     | 74.2%   | 40.3%     | 85.6%      | 59.0%     |
| Have supplies all in one place                |         |           |         |           |            |           |
| Before presentation                           | 33.0%   | 31.6%     | 24.2%   | 24.0%     | 48.5%      | 45.4%     |
| After presentation                            | 37.6%   | 80.1%     | 24.2%   | 78.2%     | 58.9%      | 80.1%     |
| Designated contact person                     | 3.5%    | 11.0%     | 2.2%    | 12.0%     | 10.1%      | 16.8%     |
| Practise what to do                           | 2.1%    | 14.1%     | 1.4%    | 11.3%     | 2.4%       | 14.2%     |
| Knew how they would be warned                 | 2.4%    | 17.1%     | 1.3%    | 15.3%     | -          | -         |

**Table 1.** Extent of preparedness for those who saw tornado, flood and earthquake preparedness presentations with or without disaster images

|            | Before Presentation |               |             | After Presentation |               |             |
|------------|---------------------|---------------|-------------|--------------------|---------------|-------------|
|            | Know what to do     | Probably know | Do not know | Know what to do    | Probably know | Do not know |
| Tornado    | 65.1%               | 21.9%         | 9.2%        |                    |               |             |
| Damage     |                     |               |             | 58.0%              | 28.9%         | 7.0%        |
| No Damage  |                     |               |             | 80.0%              | 7.8%          | 5.2%        |
| Flood      | 63.5%               | 19.7%         | 9.2%        |                    |               |             |
| Damage     |                     |               |             | 54.3%              | 31.9%         | 7.2%        |
| No Damage  |                     |               |             | 81.2%              | 7.5%          | 4.5%        |
| Earthquake | 68.4%               | 23.6%         | 5.9%        |                    |               |             |
| Damage     |                     |               |             | 56.2%              | 29.9%         | 6.7%        |
| No Damage  |                     |               |             | 83.5%              | 5.1%          | 5.1%        |

**Table 2.** Response to the question: "Do you feel you and the members of your household would know what to do in case a disaster happened right now?"

|            | Before Presentation |       | After Presentation |       |
|------------|---------------------|-------|--------------------|-------|
|            | Yes                 | No    | Yes                | No    |
| Tornado    | 24.4%               | 73.1% |                    |       |
| Damage     |                     |       | 28.9%              | 63.9% |
| No Damage  |                     |       | 54.5%              | 38.6% |
| Flood      | 15.7%               | 80.1% |                    |       |
| Damage     |                     |       | 17.6%              | 73.9% |
| No Damage  |                     |       | 48.5%              | 45.0% |
| Earthquake | 11.2%               | 84.0% |                    |       |
| Damage     |                     |       | 10.2%              | 82.9% |
| No Damage  |                     |       | 34.4%              | 58.8% |

**Table 3.** Response to the question: “Do you really think a disaster could happen where you live?”

### Appendix Two

The figures in the tables below only show percentage of organisations that reported to undertake activity *after* receiving the insert. Preparedness measures may have already been undertaken prior to receiving the insert and deemed adequate.

|          | Initial Preparedness Activities |     |     | Updating Emergency Plans | Emergency Preparedness Activities |     |     | Informing the Public |
|----------|---------------------------------|-----|-----|--------------------------|-----------------------------------|-----|-----|----------------------|
|          | P                               | D   | T   | Plan                     | D                                 | T   | S   |                      |
| A/O      | 0%                              | 40% | 10% | 29%                      | 48%                               | 20% | 5%  | 5%                   |
| SC/SJ    | 0%                              | 73% | 9%  | 41%                      | 73%                               | 63% | 14% | 0%                   |
| SF       | 0%                              | 44% | 22% | 39%                      | 72%                               | 38% | 18% | 6%                   |
| Business | 9%                              | 32% | 20% | 30%                      | 54%                               | 41% | 17% | 6%                   |
| State    | 7%                              | 15% | 0%  | 64%                      | 46%                               | 54% | 0%  | 7%                   |
| Federal  | 18%                             | 46% | 0%  | 36%                      | 64%                               | 45% | 36% | 9%                   |

A/O = Alameda County/Oakland SC/SJ = Santa Clara County/ San Jose SF = San Francisco

**Table 1.** Preparedness activities undertaken by various organisations after receiving the insert

| Mitigation Activities  |     |     |     |     |     |     |
|--|-----|-----|-----|-----|-----|-----|
|  | HMS | Ins | CP  | SA  | SR  | SM  |
| A/O  | 14% | 0%  | 19% | 0%  | 19% | 19% |
| SC/SJ  | 5%  | 5%  | 27% | 0%  | 9%  | 9%  |
| SF   | 0%  | 0%  | 22% | 28% | 39% | 39% |
| Business   | 9%  | 11% | 30% | 15% | 13% | 17% |
| State  | 0%  | 0%  | 29% | 15% | 0%  | 0%  |
| Federal  | 0%  | 0%  | 30% | 10% | 0%  | 10% |
| P = Plan D = Drill T = Training S = Stockpile HMS = Hazardous Material Storage Ins = Insurance<br>CP = Contents Protection SA = Structural Assessment SR = Structural Rehabilitation<br>SM = Structural Mitigation |     |     |     |     |     |     |

**Table 2.** Mitigation activities undertaken by various organisations after receiving the insert

### Appendix Three

|  | KPI Target | KPI Achieved Dec 2001 | KPI Achieved Oct 2002 | KPI Achieved Oct 2003 |
|--|------------|-----------------------|-----------------------|-----------------------|
| Correct Role Associations (Educating about disaster, funding research, providing natural disaster insurance, helping organise repairs) | 75%        | 30%                   | 34%                   | 37%                   |
| Favourable or neutral attitudes  | 90%        | 89%                   | 92%                   | 90%                   |
| Knowledgeability about mitigating damage from natural disasters  | 50%        | 47%                   | 46%                   | 45%                   |
| Spontaneous mention of having taken action to mitigate damage from natural disasters   | 35%        | 44%                   | 41%                   | 48%                   |
| In Quake Zone  | 35%        | 45%                   | 44%                   | 55%                   |
| Outside Quake Zone   | 35%        | 31%                   | 39%                   | 40%                   |

**Table 1.** Results for variables with Key Performance Indicators

|  | October 2002 | July 2003 | October 2003 |
|--|--------------|-----------|--------------|
| Perceived risk (At least some risk)  |              |           |              |
| Earthquakes  | 73%          | 70%       | 71%          |
| In Quake Zone (Fairly to very high risk)   | 49%          | 45%       | 49%          |
| Outside Quake Zone(Fairly to very high risk)   | 21%          | 17%       | 20%          |
| Volcanic Eruption  | 33%          | 31%       | 29%          |
| Landslips  | 32%          | 19%       | 22%          |
| Tsunami  | 28%          | 26%       | 24%          |
| Hydrothermal Activity  | 10%          | 9%        | 7%           |
| Spontaneous mention of having taken action to mitigate damage from natural disasters | 41%          | 38%       | 48%          |
| In Quake Zone  | 44%          | 37%       | 55%          |
| Outside Quake Zone   | 39%          | 38%       | 40%          |
| Mention of securing property   | 34%          | 27%       | 37%          |
| Taken out insurance  | 5%           | 6%        | 10%          |
| To at least 'some' extent, this action was taken out to reduce earthquake damage     |              |           |              |
| Secure hot water cylinder  | -            | -         | 97%          |
| Hang pictures/mirrors on closed hooks  | -            | -         | 88%          |
| Secure Tall furniture  | -            | -         | 83%          |
| Install latches on cupboards   | -            | -         | 81%          |
| Place Velcro or non-slip mats  | -            | -         | 76%          |
| Keep heavy things on lower shelves   | -            | -         | 72%          |
| Secure roofing tiles   | -            | -         | 69%          |
| Secure ornaments/cabinet doors   | -            | -         | 65%          |
| Secure other items inside the house  | -            | -         | 58%          |
| Secure chimneys  | -            | -         | 34%          |
| Future intention to take action (Quite or very likely)                               | 20%          | 18%       | 24%          |
| In Quake Zone  | 25%          | 22%       | 30%          |
| Outside Quake Zone   | 14%          | 12%       | 16%          |
| Impact of advertising campaign   |              |           |              |
| Unprompted recall of any EQC advertising   | 73%          | 76%       | 63%          |
| Target audience (Females, 25-54 years)   | 78%          | 83%       | 65%          |

**Table 2.** Results for perceived risk, mitigation action and intentions and impact of advertising

|                          | Total | Inside Quake Zone | Outside Quake Zone | Target Audience Females 25-54 |
|--------------------------|-------|-------------------|--------------------|-------------------------------|
| Too much effort          | 29%   | 38%               | 20%                | 30%                           |
| Pointless                | 52%   | 45%               | 59%                | 48%                           |
| Another's responsibility | 5%    | 7%                | 4%                 | 5%                            |
| Lack of awareness        | 12%   | 5%                | 17%                | 14%                           |
| Other                    | 4%    | 7%                | 3%                 | 6%                            |

**Table 3.** Reasons given for not taking action