

# Dealing with hazards and disasters: risk perception and community participation in management

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## Introduction

Natural hazards, such as flood and drought, and their likelihood of causing disasters that lead to extreme human suffering, do not stem only from events beyond our control. As Blaikie et al. (1994, p.3) point out '... (disasters) are also a product of the social, political, and economic environment (as distinct from the natural environment) because of the way it structures the lives of different groups of people'.

It therefore follows that risk should not be defined solely by pre-determined, supposedly objective criteria that enable its various levels to be gauged through quantification. It is also a social construct, interpreted differently by all of us. Some find certain events or situations unacceptably risky and will do their utmost to avoid being involved, while to others the same events may offer exhilaration and thrills that stimulate their whole purpose in living. There may even be others to whom the particular event is a non-issue, something to be totally ignored. These differences in perception and response, coupled with differences in people's socio-economic characteristics and circumstances, result in a wide range of vulnerability in any community. Social aspects of risk interpretation must be recognised if risk is to be effectively managed, and community participation in the practical management of the problem faced is a vital component of this approach.

## Risk and vulnerability: some definitions

### Risk

- Risk includes two elements — the likelihood of something happening and the consequences if it happens (Beer and Ziolkowski, 1995).
- Risk occurs where factors and processes are sufficiently measurable for believable probability distributions to be assigned to the range of possible outcomes (Dovers, 1995).
- Risk is the perceived likelihood of given levels of harm (EMA, 1995).

Presented at a workshop: 'Putting the Community into Emergency Risk Management', Australian Emergency Management Institute, 18–19 November 1997.

These definitions indicate the importance not only of recognising that risk occurs but also of being able to measure its level e.g. severe, moderate, minor.

### Vulnerability

- Vulnerability is the susceptibility to harm of those at risk.
- Vulnerability is the coping capacity of those at risk (Handmer, 1995).
- Vulnerability is the degree of susceptibility and resilience of the community and environment to hazards (EMA, 1995).
- Vulnerability depends on the characteristics of a person or group in terms of capacity to anticipate, cope with, resist and recover from the impact of a hazard (Blaikie et al. 1994).

Risk can only be managed if those who are vulnerable are identified. As Salter (1995) comments, risk and vulnerability are inextricably linked and therefore vulnerability must be understood if risk is to be managed.

### Contemporary approaches to risk and vulnerability assessment

In general earlier approaches to risk assessment, which were primarily quantitative and favoured technical solutions, have been replaced by more holistic approaches which recognise not only the need for technical assessment of risk but also the interlinkages of technical elements with socio-economic and political factors. Social scientific approaches, including the recognition that risk is interpreted as a social construct, now play a vital role in the assessment of risk and vulnerability (Salter, 1995). This fundamental change parallels changes in related philosophies and processes such as:

- *development*—people-centred and sustainable rather than solely economic)

- *impact assessment*—social as well as environmental, and socio-political as well as technical or quantitative
- *planning*—an adaptive process (people-oriented) in which the experience gained in taking part (the process itself) is the goal rather than a prescriptive process in which the plan itself is the goal.

### Social constructs of risk and some implications for vulnerability

The following important human attributes (some quantifiable and some non-quantifiable) affect how different people assess risk, and how vulnerable they are.

- *Socio-economic characteristics* (e.g. age, gender, ethnicity, income, education, employment, health). Older people and children may be much more vulnerable than active adults. Poorer people, with fewer capital resources, are likely to suffer far more from the effects of hazards such as flood invasion of their homes. Some specific ethnic groups (e.g. Aborigines, people for whom English is a second language) may be much less able to take advantage of the assistance offered because of communication problems and cultural differences.
- *People's knowledge of the environment and of the hazards that environment poses to them* e.g. traditional ecological knowledge (TEK). TEK may be effectively used to cope with a situation that outsiders perceive to be threatening, and generally provides much more detailed understanding of local environments. It can be valuable in predicting the threats posed by hazards (e.g. when significant floods are actually likely), and can also provide people with alternative food supplies.
- *Their ignorance* (where even the direction of change or broad nature of outcomes are unclear, and where threshold effects, surprise and even chaotic processes may operate (Dovers, 1995). For example, people who

have newly moved into a vulnerable area often lack knowledge of the actual threats posed by hazards such as severe bushfires, and fail to take suggested precautions seriously.

- *Their ability to cope with those hazards (risks)* through technology, financial attributes, education, political power and having a voice. Knowledge, high levels of education and high incomes generally give people more confidence in articulating their feelings and needs and hence they may be able to cope better with adversity.
- *Their ability to access help from outside.* Having confidence (see above) makes asking for assistance much easier.

Attributes such as these highlight some key points:

- Other things being equal, it is generally those living at the margins who are most vulnerable to risk and uncertainty. Marginality in this context is defined in two main ways:
  - *socio-economic*—people who, for social or economic reasons, are outside the mainstream
  - *geographic*—people who live in very isolated locations and who as a result are often socio-economically marginalised.
- The better the understanding of these factors, the more effective are the coping mechanisms.

### Coping with risk

The key to coping with risk is being sensitive to differences in people's perceptions of the problem and hence understanding their levels of vulnerability. Working with communities at risk is essential if these ideas are to be incorporated into risk management. In this approach technical knowledge, essential for dealing with many elements of disaster mitigation, is combined with local knowledge, and the administration of risk management plans becomes a shared responsibility, integrated with local institutional structures and tapping into external forms of support.

### Example A: managing floods in Australia's rangelands

Periodic local flooding occurs frequently in Central Australian river systems. Aboriginal and non-Aboriginal responses to such flooding differ.

- Aboriginal people's TEK helps them to predict when flooding will occur and hence to plan for it in the short-term (e.g. move camps). Non-Aboriginal people often lack the detailed environmental knowledge

that would assist them in predicting flood onset.

- Aboriginal planning for the longer-term consequences of flooding is probably less adequate than formerly. They have become more dependent on external sustenance and technology (e.g. purchased foods, telephones and vehicles) and when these elements of their lifestyle are no longer available they may be in dire need of assistance. Non-Aboriginal people probably plan far more effectively for the longer-term effects of flooding, because their access to relevant technical information is much better.
- Despite recognition of flood threat, many Aboriginal people prefer to use river beds for habitation and more temporary camping, both because the environment is more attractive and water is available. Often, spiritual attachment to sites associated with water is also very high. This cultural factor may take priority over all other factors and may make people physically vulnerable.

Issues such as these are vital in flood management. While many of the Aboriginal-non-Aboriginal conflicts that have arisen over flood management in Alice Springs may have been inevitable, closer community participation, involving all groups, could well have led to workable compromise solutions.

### Example B: dealing with the effects of drought and frost in Papua New Guinea

Periodic food shortages caused by drought and frost in Papua New Guinea's highlands—referred to as '*taim hangri*'—are well documented, both in oral and written history. As subsistence farmers in a cashless society, people formerly dealt with these problems by using local knowledge (famine food), and by moving to other areas where food was still available. If everything failed vulnerable members of a group died (old people, children etc). In the contemporary era they have had other alternatives: gaining external help, both from their own government authorities or from external donors, and, if they have access to cash, buying food to tide them through. Papua New Guinea's recent (1997–98) drought and frost event has been the most severe in three decades and has highlighted some important issues concerning the management of this recurring natural hazard.

The severe effects of the 1997–98

drought stem not only from the impact of a particularly strong *El Nino* event, but also from rapid population growth (the population has roughly doubled since 1972, another severe drought year), continued dependence on subsistence farming, and increased demand for material wealth gained through participation in the cash economy.

For rural families (still around 83% of the population), cash-cropping remains the principal avenue to a cash income. Thus pressure to increase the amount of land under cash crops is relentless. Some people have virtually become landless, while others are embroiled in conflicts over access to land and resources. These problems are compounded by a limited and often defective transport and communication network. Apart from food and water shortages in many parts of the country, the effects of the drought have included rural-urban population movement and the closure of schools and health centres.

Donor agencies that provided assistance for drought- and frost-affected areas in Papua New Guinea included the PNG government, the Australian government (through AusAID) and a wide range of NGOs, many of which worked in conjunction with government donors. Their prime task was to improve food and water supplies to those in need—an estimated 500 000 people in October 1997 (compared to 150 000 who received food aid in 1972).

Identification of the most severely affected areas and establishing smooth distributional mechanisms were major challenges. Researchers at the Australian National University, along with teams of PNG fieldworkers, conducted a wide-ranging survey in September–October 1997, and their findings, which mapped areas of the country in terms of immediacy of relief requirements, provided the framework for allocation of aid (Allen and Bourke, 1997).

But provision of aid and identification of areas in immediate need is only one aspect required. Others include:

- understanding of local perception of the problem and of how to deal with it
- understanding of the intricacies of subsistence farming systems and how these integrate aspects of the whole cycle of food production
- understanding of local institutional structures dealing with administration, distribution etc.
- realisation that long term planning, rather than short-term food provision, is required

- as far as possible, involving local communities in delivering food aid.

### Involving communities in the management of risk

Practical approaches in risk management should build on both the technical knowhow of professionally-trained people and the knowledge and perceptions of those at risk. Instituting risk management plans that ignore local knowledge, local political structures and local priorities will not be effective. Neither will plans built largely on local knowledge without external technical input where relevant.

A compromise is needed. This means formulating risk management plans into which the community has input and which local people help to implement. Consultation, discussion and negotiation are vital aspects of such an approach. In emergency situations, where speed is essential to save human lives, this might initially have to be very superficial. But immediate action is only part of the management process. Longer-term planning, to make people less vulnerable next time, is also vital and it

is here that community participation can have a lasting impact. Risk management is a two-way process that must take into account, on the one hand, the hazard and its impact on people, and, on the other, the people's responses to the situation. Key approaches to risk management are therefore *enhancing coping capacity* and *reducing susceptibility to harm*.

Vital elements in these are:

- *Flexibility*—recognising social and cultural differences in population groups and working within frameworks that allow the impact of such differences to be taken into account.
- *Information on how to cope*—ensuring that people potentially affected are fully informed on all aspects of the hazard which threatens them.
- *Public and particularly community participation in risk management, and especially in planning*.

### References

Allen B. and Bourke M. 1997, *Report of an Assessment of the Impacts of Frost and Drought in Papua New Guinea*, unpublished report for Australian Agency for International Development (AusAID),

Port Moresby, PNG.

Beer T. and Ziolkowski F. 1995: *Environmental Risk Assessment: an Australian Perspective*, Report to Environment Protection Agency (EPA), AGPS, Canberra.

Blaikie P., Cannon T., Davis I. and Wisner B. 1994, *At Risk: Natural Hazards, People's Vulnerability and Disasters*, Routledge, London.

Dovers S. 1995, 'Risk, uncertainty and ignorance: policy process and institutional issues', background paper, Fenner Conference on the Environment: Risk and Uncertainty in Environmental Management, Canberra.

Emergency Management Australia 1995, *National Emergency Management Competency Standards*, EMA, Canberra.

Handmer J. 1995, 'Issues Emerging from Natural Hazard Research and Emergency Management', background paper, Fenner Conference on the Environment: Risk and Uncertainty in Environmental Management, Canberra.

Salter J. 1995, 'Towards a Better Disaster Management Methodology', *Australian Journal of Emergency Management*, Vol. 10, No. 4, pp. 8-16.

## New publications

### Disaster mitigation

#### ***Mitigating the millennium: community participation and impact measurement in disaster preparedness and mitigation programmes***

Scobie, Jane (ed.)  
Intermediate Technology  
Rugby, UK, 1997  
F 363.347 MIT

Practitioners working on disaster management issues in both relief and long-term development programs examined ways to promote local participation in mitigation.

Topics include: encouraging community participation in practice, defining a participative approach, evaluating and measuring the impact of mitigation projects, prioritising mitigation, undertaking emergency preparedness in cyclone areas in Madagascar, improving practice, getting donors involved in disaster mitigation, and recommending initiatives to reduce hazards through the promotion of community-based disaster mitigation programs at all levels of government. (74 pages).

#### ***Economic assessment of disaster mitigation: an Australian guide***

Handmer, John W. and Thompson, Paul, Middlesex University, Flood Hazard Research Centre, Middlesex, UK, 1996, F 363.347 ECO

Major investments to reduce the risk of loss from natural hazards in Australia, as in other countries, are in part justified by assessing the likely economic benefits compared with the costs. However, in assessing the losses from natural disasters—which form the benefits of mitigation measures—there is a lack of guidance on what precisely may be counted. The Australian IDNDR Committee has recognised the need for improved and more consistent economic assessment methods to be applied to disaster mitigation, and has funded this study (91 pages).

#### ***Mitigation of disasters in health facilities***

O'Connor Bill, Wilson Wendy and Brennan, Bryna  
Pan American Health Organisation/  
World Health Organisation,  
Washington DC, 1996  
Video no. 335

Discusses mitigation of natural disasters in health facilities in Latin America and the Caribbean. When a natural disaster strikes, health facilities are often among its victims. Much damage can be prevented beforehand. Retrofitting of existing facilities and vulnerability assessment are major aspects of mitigation.

### Disaster preparedness

#### ***Escape to safety: the evacuation of a health care facility***

Health Dept. of Western Australia,  
East Perth, 1991, Video no. 269

The management body of a health care facility is responsible for the safety of its patients and residents as well as its staff, trades people and visitors. Evacuation policies and procedures must cater for all concerned. This video depicts the basic measures necessary to fulfil the important responsibility of getting all those affected by an emergency to a place of relative safety. Intended as a training aid only, produced to initiate discussion on the emergency policies and procedures of individual facilities.