We are all vulnerable

John Handmer suggests the issue of 'vulnerability' should be turned around and approached positively as resilience or as the capacity to cope with change.

By John Handmer

The fact that we are all, in one way or another, vulnerable, is of limited value to emergency managers. Priorities need to be identified, and we need assessment methods to achieve this, as opposed to approaches where everyone is found to need support. Clear identification of the purpose and scale of any vulnerability assessment, along with acknowledgement that the details of vulnerability may be inherently unknowable, are seen as prerequisites for this task.

Some relevant definitions and approaches to measurement are reviewed, and suggestions made for moving towards an improved approach for Australia and comparable countries. Among other things, it is suggested that the issue of "vulnerability" should be turned around and approached positively as resilience or as the capacity to cope with or adapt to change. This should be politically more acceptable than a focus on the negative connotations of vulnerability. It would also be consistent with the approach being taken by global climate change researchers—a group with much profile and influence.

We are all vulnerable

We are all mortal, and vulnerability is something mortals are endowed with. In the same way, we are not omniscient and therefore must live with uncertainty about the future. Not surprisingly much human effort is dedicated towards managing that uncertainty in ways that reduce or appear to reduce vulnerability. This is the case whether we buy insurance, or depend on the beneficence of a higher being.

People can do many things to reduce their vulnerability and the more they do the more resilient they become in the face of (most) hazards—or to use expressions gaining currency, the greater their coping or adaptive capacity. A case can be made that as a nation Australia has become increasingly resilient, in contrast to the situation in many of our near neighbours (in Melanesia and Indonesia for example) where resilience has declined steadily over the last decade or so. For convenience, resilience is assessed in this context in terms of the conventional macro "outcome" indicators of life expectancy and infant mortality, as well as employment, education, income and welfare provision (consistent with the UNDP's – United Nations Development Program – Human Development Index, see www.undp.org/hdro/), and the not so conventional but critical issues of continuity management and absence of warfare on our territory. I would assert that this pattern of international comparison holds up well across Australia and the south-west Pacific with the possible exception being remote communities (communities being defined here as settlements or neighbourhoods) in Australia. It is also valid across scales apart from the individual and household levels where there is immense diversity.

If we can see that there are large and growing differences between societies in terms of resilience and if we can suggest ways that communities or individuals can become more or less resilient, then it should be possible to measure resilience.

However, if the opening line of this paper is correct there is a need for focus: if everyone is vulnerable, what should the priority be? The limited resources available for public policy objectives should be directed at those who are the worst off, in other words those who are most vulnerable or the least resilient. The question becomes: how to identify this group or these people? And then how to develop policies and programs that meet their needs? This paper examines some of the issues, definitional questions and approaches to measurement. It suggests directions for improvements.

Vulnerability, resilience and risk

Before examining approaches to measurement, it is useful to set out some definitions and related issues. Here, I rely mainly, but not solely, on definitions published by EMA (Emergency Management Australia www.ema.gov.au) and based on the Australian/New Zealand risk management standard (AS/NZS 4360: 1999 www.standards.com.au/catalogue/script/search.asp). Risk is seen as a function of hazard (itself defined as the geophysical phenomenon), the assets and people exposed to the hazard, and the vulnerability of what is exposed. Vulnerability is seen as a function of

susceptibility to loss and the capacity to recover. This capacity is termed resilience by EMA and it is here I depart from their terminology. The definition is sound but I prefer to use the term resilience generally in place of vulnerability because of its positive connotations of coping capacity. (That said, I acknowledge that there may be useful distinctions from a policy perspective between vulnerability, resilience and capacity; and there are often political or administrative reasons for defining certain groups as vulnerable or resilient—but these issues are not pursued here.) This general use of "resilience" appears to be supported by the UN International Strategy for Disaster Reduction (ISDR) which defines resilience as (www.unisdr.org/unisdr/Annex%201%20Terminology.pdf (2002)):

> *"The capacity of a system, community or society to resist or to change in order that it may obtain an acceptable level in functioning and structure. This is determined by the degree to which the social system is capable of organising itself and the ability to increase its capacity for learning and adaptation, including the capacity to recover from a disaster."*

The ISDR defines "capacities" as the opposite of "vulnerability".

This is broadly similar to the concept of adaptive-capacity which has been co-opted and developed by the global coalition of climate change researchers (see the Intergovernmental Panel on Climate Change at http://www.unep.ch/ipcc/). (The term has long been used by geographers in a broadly similar way.) In the climate change context, "adaptive capacity" is defined as a purposeful adjustment in response to actual or predicted climate change with the aim of moderating the impact. However, the world is full of surprises and pro-active adaptation needs to be conceptualised broadly to include capacity to cope with the unexpected. Given the collective public profile and influence of climate change researchers, it makes sense to consider adopting a broad interpretation of their terminology.

The definition of risk set out above is now very widely employed and is illustrated in the "risk triangle" (see below).
(Also see www.ga.gov.au/urban /factsheets/risk_modelling.jsp for an explanation of this definition.) The idea being that the area of the triangle represents the "risk", while the sides of this triangle represent the hazard (eg flood water), exposure (eg housing on a floodplain), and vulnerability (eg there is no warning system and much of the housing is occupied by people who are long-term unemployed). Altering any side of the triangle (hazard, exposure or vulnerability) alters the risk. Exposure and vulnerability will generally be much more complex and difficult to define than the hazard. The concept is very useful in an analytical sense, especially for risks over which there is little argument, but has its limits. For example, where do the issues of trust and fairness fit? These are central to an understanding of contemporary risk debates.

Where complex risks are concerned the limits of the triangle become more apparent. The so called "natural hazards" of floods, droughts and so on can seem complex enough, but hazards emanating from socio-technical systems will often be much more counter-intuitive, resistant to quantification and even to precise definition (see Table 1). These more complex hazards may have no clear spatial or temporal boundaries, and no agreed solutions. Ignorance may be profound creating problems for a strictly quantified approach. Examples of such hazards would include, the human form of BSE (Bovine Spongiform Encephalitis), GMOs (Genetically Modified Organisms), terrorism, many contaminants including those of a radiological nature, and large scale financial fraud. Their attributes make it very difficult for individuals, groups, communities and emergency managers to assess vulnerability and coping capacity.

Table 1. Some characteristics of complex unbounded risks.

- largely invisible;
- they resist definition in space and time;
- there may be a climate of fear;
- concern and anxiety may increase over time;
- often things do not gradually get better;
- compensation as in restoration may be impossible – the impacts may be irreversible and large scale;
- attempts at mitigation may make things worse;
- someone may be blamed – someone profits;
- typically ignorance is profound – there may be no acknowledged history. Sound quantification may be impossible.

Assessing vulnerability and resilience

Some attempts at vulnerability assessment map aspects of the geo-physical hazard. The people's vulnerability is defined in terms of the physical properties shown on the maps. They tell us something of the hazard, which is an essential part of risk under the definitions widely employed in Australia. Often infrastructure, buildings and some

demographics may be shown. These are important parts of the elements at risk exposed to the hazard. But they do not tell us about people's resilience or coping capacity. This approach to assessment often relates to a single hazard: eg "vulnerability to flooding". The approach may be very useful in some planning and mitigation contexts, but it is less about vulnerability and more about hazard and exposure.

Other typical approaches to vulnerability and resilience assessment are set out in the list below. In examining definitions for their utility and when debating the merits of different approaches it is important to be clear about both the scale being addressed, and the purpose of the definition (or indicator of vulnerability or resilience). At many meetings on this subject over the last few years definitions useful at a local operational level were often confused with those useful at a more macro policy level as well as with those intended for analysis and research. Any attempt at analysis or the development of general indicators of resilience can be undermined by quoting cases where individuals or households do not fit the analysis or indicator. Such cases are of central importance during local operations, but may not be relevant to a broader analysis. (For one approach to identifying local vulnerability see www.dhs.vic.gov.au/emergency/recman/publication.htm.) Many researchers are interested in the root causes of and processes underlying apparently low and high levels of coping capacity. These may go well back into history, and at the current state of knowledge may have limited direct relevance to policy and operations. However, they are part of the continuing enquiry into vulnerability and resilience.

Some approaches to assessment:

- The *macro indicators* listed at the start of this paper may be useful in some contexts, although they may disguise many inequities and pockets of low resilience and their coarse nature reduces their operational utility. They highlight that ultimately much about vulnerability concerns development and social organisation at the macro scale. Other macro indicators would report on the quality and availability of emergency services;
- *The "list" approach.* Many attempts to measure vulnerability come close to measuring everything (or at least everything for which measurement seems easy) on the perfectly reasonable grounds that everything is relevant. Everything may well be relevant in different circumstances as resilience is to some extent specific to situations, and at the local operational level it is necessary to know which individuals and households need assistance. But the pragmatics of policy, management and operations, all set within constrained budgets and competing social, economic, health and security interests, require that we focus on a small number of factors and that public policy effort concentrates on those people and places most in need;

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- International uniformity. Other attempts use indicators because they have been used traditionally or because they are used internationally. This approach can assume that an appropriate indicator of vulnerability to famine in Bangladesh or Mali, is also appropriate in Melbourne. That may be the case, but I have seen no evidence that similar indicators are valid at the operational level across cultures and societies. Macro indicators at the societal or national level such as those mentioned at the outset above may however be valid for analysis and for priority setting at a large scale. The initial work on the UNDP's *World Vulnerability Report* is in this category, in that it should enrich understanding of the complexity and forms of vulnerability.
- *Self assessment.* One approach which may work cross-culturally is that of asking those at risk to identify their own vulnerabilities and capacities—in conjunction with a program to identify local risks and mitigation options. This is an important part of an approach promoted by the IFRC (International Federation of Red Cross/Red Crescent Societies) and set out in their 2002 World Disasters Report www.ifrc.org/ PUBLICAT/wdr2002/chapter6.asp

Some indicators of vulnerability may be based on stereotypes with little research support, whereby particular groups of people are assumed to have little resilience or coping capacity within the ambit of public policy. Elderly people are frequently seen as a vulnerable group, but during the recent Victorian gas crisis, it appears that they generally coped better than younger people; Melbourne's large population of women from the Horn of Africa was thought to be a special needs group, but officials now report that as a group they appear to be particularly adaptable and resilient. The policy context is important, for example young children may

Table 2. Possible indicators of resilience at the household and community Level. These are presented as static, but in all cases trends and stability would be important. (Ranked from most important first.)

VARIABLE	LOGIC	POTENTIAL INDICATORS
Livelihood security	Ability to absorb losses through an assured supply of employment, income or other strategies	Wealth, income security
Access to crisis support – formal and informal.	Rich or poor, crises demand support from kin, the state or insurance. Much work esp. in social capital suggests that active networks are key. But emergent networks may be just as effective. Must be visible to be noticed.	Welfare access, insurance coverage, health and emergency service coverage and quality. Household structure. Personal networks. Visibility.
Housing quality	Housing can protect us from most hazards, provides identity and well-being.	House age, condition, insurance, locally appropriate (eg raised), or safe refuges.
Self assessment of resilience.	Psychological state, strong coping ability, and awareness of personal networks, are important factors enhancing resilience. Even if these factors could be measured externally, self assessment may be the most useful approach.	Interviews, well-being indicators. Strength of informal ties and life skills

be very vulnerable, but are generally very well supported in Australian communities.

Some suggestions

Drawing on many papers on the subject, the workshops run over the last few years on vulnerability indicators in Australia and UK, and other debates, I suggest some key variables in Table 2 which might be useful for identifying groups with low levels of resilience to environmental and social change in Australian society. These groups are not devoid of resilience and there would be some circumstances where they might cope better than most. As indicated earlier, purpose is important for any assessment. Here the purpose would be to identify those groups which would benefit the most from having their resilience enhanced. Generally, in a post-disaster recovery operation, the responsible authorities would need to conduct detailed local investigations to ensure that especially vulnerable individuals were not overlooked.

Evidence is needed for most of the suggestions and is being compiled from the research literature. It may be that a fundamental basis of resilience is local (or community) livelihood security (eg see Working Paper 2 at www.benfieldhrc.org/.) Without this communities may become entirely dependent on welfare where that is provided.

It is important to appreciate that detailed accurate assessment of resilience or vulnerability is an illusion. The whole area is immensely complex with actual resilience shifting according to the details of the situation, which can change rapidly around the group or community under consideration. Immediately after the events of 11 September 2001 in the United States, many Australian Moslems and people of Middle-Eastern descent overnight found themselves the target of abuse and suspicion. Events far away with which they had no connection had an immediate impact on their capacity to cope with living in Australia by making their lives more dangerous. This highlights the power of labelling, and serves as a warning about the potential for stigmatising communities and identifiable social groups.

From a research and operational perspective it can be very difficult to come to grips with the informal networks, relationships, knowledge and state of mind that may be more important to resilience than formal positions and access to resources. We can map many of these network attributes and linkages under normal day-to-day circumstances, but during a crisis emergent networks may be critical to coping. These may be dormant or invisible normally and therefore difficult to identify. Examples would include connections with neighbours.

Table 3. Other variables in resilience.

VARIABLE	LOGIC	POTENTIAL MEASURE
Dependency	Communities with a high degree of reliance on formal or informal social services will have less resilience.	Percentage of population unemployed including children. Trends would be particularly important here.
Isolation – social and physical	Isolated, less visible groups have less access to crisis support and personal networks.	
Environmental justice	Some groups find themselves in contaminated or otherwise very risky locations—with no avenues for justice.	Self appraisal

Other factors that appear to be important are set out below. They are not included in Table 2 as it seems that they are, or can be, included in the indicators already listed. Factors that may be particularly important in poorer countries would include the strength of civil society and institutions, and broader human rights concerns. These have not been included here as the focus is on Australia and comparable countries.

Counter arguments

Arguments against the suggestions set out above are considered here. These counter arguments fall into two categories: that the points made may be wrong or seriously deficient; and secondly, that key issues may have been overlooked.

The paper defines resilience and vulnerability in generic terms. However, most definitions treat the subject implicitly if not explicitly, in the context of some defined hazard: for example, a community may be resilient in the face of bushfires, but not in the face of economic change. The argument in the paper is that there are underlying generic attributes which make people and communities more or less resilient to most if not all hazards and stresses. At the community and larger scales, I believe it is likely that generic attributes underlie resilience. However, the household and individual levels are very circumstantially dependent and resilience is more likely to be hazard specific. It may be that as everyone does need support from at least some hazards and in some circumstances, emergency managers need to find ways of dealing with this, rather than attempting to identify high priority groups as in this paper. This is where the current approach of undertaking case-by-case post-disaster assessments may be the best approach—when properly supported by pre-event planning.

Much of the material set out in this paper is based implicitly, if not explicitly, on the concepts of social capital and community. These are poorly defined, and often not defined at all even though used extensively in policy and debate. Some writers reject them completely (see Kit Carson "Is communalism dead? at www.rsointernet.com/anzsoc/start/programabstracts.pdf.) There is no question that the debates should continue and that the terms need clarity. However, from a practical viewpoint the terms are so widely used and embedded in policy and operational thinking that it is pragmatic to continue to use them while the intellectual discussion continues. Another argument is that in Australia the local community is often not important to household livelihood security.

It is possible that livelihood security may be of limited relevance in rich countries, especially those like Australia with reasonably comprehensive welfare systems—which should guarantee a reasonable livelihood. However, some wealthy countries have limited welfare, and everywhere there are significant gaps in provision. In addition, for most people welfare is no substitute for other forms of income—in particular because of the low level of welfare and the dramatic change to lifestyle sudden dependence on welfare may entail. (As an aside, some of those who commented on the drafts of this paper believe that the Australian welfare system is becoming increasingly limited with potentially negative impacts on resilience.)

Self-assessment may be criticised as being subjective, inaccurate, or tied up with other agendas. Regardless of whether this is the case or not, subjective assessment may be exactly what is wanted if it provides reasonable insight into coping capacity.

The second general category of counter arguments concerns factors other than those listed. Some of these factors may be very important in resilience, but it is not clear that they would be of any operational use, nor is it obvious how public policy could deal with them. These factors include the role of globalisation in making communities more or less able to deal with crises and major change; and the whole issue of root causes which may be embedded in the history and development of the people involved. Where poorer developing countries are concerned, these two issues may be closely linked. Human rights have been mentioned, but then set aside

in the context of countries like Australia. However, there appear to be connections between a rights based approach and vulnerability www.apu.ac.uk/geography/radix/humanrights5.htm.), and a case could be made that they should be included.

What can be done?

Almost every aspect of the field of vulnerability and resilience assessment and management is contested and demands attention—even the basic terminology. The paper has argued that there are viable generic indicators of resilience, and this conclusion offers some suggestions on terminology and assessment. But there is also another major challenge for those in the field not dealt with here: that is to conceptualise coping capacity for the less visible, unbounded and apparently emerging risks such as BSE and terrorism.

The initial suggestions set out in Table 2 (and 3) above could be refined for use in identifying areas of relatively low resilience and capacity. Some issues needing at least partial resolution are suggested below:

- Accept that assessment of resilience will always contain an element of uncertainty. The small scale details of resilience may be inherently unknowable—especially in the case of complex communities undergoing constant change. Even if they could be determined with precision the assessment could be dated immediately as circumstances changed.
- Identify the assumptions underlying much work and policy on vulnerability and resilience, and search for evidence for these.
- Concentrate on the identification of key variables for resilience assessment, and search for appropriate indicators in existing data sets. This needs to be driven by a clear purpose with an understanding of the appropriate scale: is the work for local operations, policy implementation, or research and analysis—and in the last category, are we interested in research with immediate application or in examining the historical, and possible future, evolution of resilience?
- Develop approaches to assessing community and household coping capacity—and the role of the concept of social capital in this.
- Are globalisation and other macro trends having significant impacts on the resilience of Australian communities?

We are all vulnerable, but we are also all resilient, and we all have adaptive capacity. Building resilience and capacity is politically appealing and a practical policy response to communities in difficulties—labelling or stigmatising communities as particularly vulnerable or incapable is not usually politically appealing and is often strongly opposed by the communities involved (unless there are significant financial benefits). It may also send the wrong message if the policy aim is to encourage people and communities to take more responsibility for their risks. "Vulnerability" can be seen as negative and disempowering in contrast to the more positive concepts of "resilience", "coping capacity" or "adaptive capacity". As the term "adaptive capacity" is used and promoted by the global climate change community – a group with considerable profile and influence – it may be worthwhile for others to consider adopting the expression.

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