

Re-defining community and vulnerability in the context of emergency management

Risk management is progressively being applied to emergency management and is a useful development. It has notions of 'community' and 'vulnerability' as key elements. These concepts are not well drawn out in the risk assessment process. If we examine these issues in functional terms and move away from a dependence on arbitrary administrative boundaries for emergency management, we can make progress towards targeting services more effectively and achieving greater community involvement in emergency management.

Introduction

The goal of emergency management is the effective delivery of services to a target population. This applies to prevention and response activities as well as it does to recovery activities where defined programs and recipient groups are often easier to identify.

For services to be effective, delivered efficiently and in a timely manner and through appropriate systems they must be planned and designed to meet a particular need, that is they must be targeted as precisely as practicable. Once needs and recipients have been identified they may be aggregated into a community for which a service delivery structure can be developed that directly links services and needs.

A key issue therefore, for emergency managers is to define the most appropriate catchment for delivering services to meet needs.

To achieve effective services emergency managers therefore need a clear understanding of the phenomena with which they have to deal. These include the hazards (such as fire and flood) in themselves and they also include the social phenomena at risk from the hazards.

Communities, meaning in its broadest sense local populations, are now accepted by emergency managers as an integral and fundamental part of the emergency management structure.

Having a better understanding of the phenomena with which we have to deal, whether they are of bio-physical, social, economic or psychological origin, will enable us to develop strategies and actions across prevention, response and recovery

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that better achieve their goals and maximise public safety.

There are alternative perspectives that can be applied to planning services for emergency management and these perspectives may lead us to modify the basis on which some services are currently planned and delivered. At least, these alternative perspectives will allow us to more effectively target services by a more precise definition of needs and target groups.

I do not want to suggest that existing administrative areas are, necessarily, inappropriate but I do believe that in the interests of better program management and more effective service delivery we need to constantly review the basis of our planning and operational arrangements. This applies increasingly in a world subject to change (such as municipal amalgamations and agency restructures) where we need to work from the most stable and constant elements in a changing environment.

Until recently the paradigm of understanding that applied to emergency management concerned itself largely with the hazard agent itself. As a result, describing, measuring and controlling hazards, and in turn preventing or suppressing them, were the priority activities of emergency management.

This approach made good sense in the early years of systematic emergency management, given that protecting life, property and well being must be the initial concerns of emergency managers. The understanding we have gained of hazard dynamics enabled us to develop effective and professional response systems.

However, this approach makes less sense in prevention and recovery activities where social activity, and the interaction between the community and the hazard, is at least

of equal importance to effective program delivery as an understanding of the hazard itself.

Hazards are important only in so far as they threaten or harm human activities or assets or those (such as the environment) on which we place some value.

Despite the need to understand communities and affected populations so that services can be targeted and priorities for programs established there is virtually no assessment of need or vulnerability analysis currently undertaken.

VICSES are promoting the need to carry out vulnerability studies as part of the risk assessment process and DHS undertakes locally-based needs analysis after disasters. But neither agency approaches these assessment processes with consistency across the State, with rigour or with an understanding of the theory and methodology required by studies that will yield useful outcomes in terms of offering direction to planning and program development. Both agencies are developing their capability in this area but are constrained, in my view, by the limits of the risk management documentation.

In its strategic sense emergency management is not just about understanding hazard causation; it includes understanding the full range of consequences of hazard impact, and it is about understanding the relationships of environmental, political, social and economic forces that influence shape the frequency, nature and location of emergencies.

Unless we understand these issues we will not be able to develop effective prevention and preparedness programs and we will not be able to develop systems and programs that effectively mitigate impacts or sustain communities in recovering from impacts.

Most importantly however, if we are to base emergency management on the community, if we are to engage the community in planning and self-protection then we require a clear and accurate sense of what we mean by community. Our current, simplistic notion of community as all the people in a given area (ignoring internal diversity and external links and relationships) is not adequate to meet the needs either of emergency managers or of local people themselves.

Risk management

In recent years the emergency management community has acknowledged the need to improve planning theory and capability and in response to this a risk management approach is being adopted by many agencies. This is a significant step towards achieving a clearer understanding of issues and priorities in achieving higher levels of public safety.

The risk management approach moves away from a single focus on the hazard agent and gives more attention to:

- the social, political and environmental contexts in which hazards occur
- the values and principles that guide decision making
- the risk (potential consequences for identified populations)
- the range of options to deal with the risk
- the process for selecting, implementing and monitoring risk treatments.

In Victoria a risk management approach to emergency management is being progressively adopted and promises significant advances in management and operations. Both the Victoria State Emergency Service and the Country Fire Authority are making notable progress in integrating risk management with their planning, prevention and response operations.

The risk management approach relies in part, but significantly, on the key concepts of community and vulnerability. In operational terms a risk management approach involves the community in the planning process and uses the concept of vulnerability as a criterion in assessing risk and then allocating resources.

However, 'community' and 'vulnerability' are undeveloped concepts that are applied bluntly. As a result they have less utility than if their elements were elicited and expressed with greater clarity and understanding. They could then be applied with precision in evaluating the functional requirements of emergency management programs.

A particular difficulty with the risk management standard AS/NZS 4360 and its derived processes is that it does not indicate how to identify communities, vulnerabilities and resilience. Given that these concepts are central to risk assessment the methodologies to achieve evaluate these elements of the process are not well understood by the emergency management community. Even outside this professional group the application of these issues to emergency management has not been explored in any depth.

I would like to explore the notions of community and vulnerability and to show how they can be developed in a more useful

manner than they are currently in most risk management activities.

First, let me give my own definitions. By community I mean any grouping of people that have something in common, something shared (and believing that they have something in common and having only that as a communal attribute may be sufficient to define a community).

By vulnerability I mean a propensity to loss. However, implicit in my understanding of vulnerability is the notion of differential vulnerability (that is, different people or groups may be exposed to different magnitudes of loss or may be exposed to different types of loss). As a constant, albeit often silent, partner of

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vulnerability I include the notion of resilience, which I take to be the capacity to withstand damage or to recover from a loss.

I want to indicate some key aspects of these concepts, which will allow us to more clearly articulate relevant issues, and in turn to develop and apply better services more effectively.

Let me reiterate my acknowledgement of the progress we have made in moving from a simplistic hazard-centric view of emergency management to a risk management approach. But while we have the impetus of change with us we have an opportunity to move further ahead.

I would like to draw out some of the issues in understanding community and vulnerability and to then illustrate these by reference to some recent emergencies in Victoria.

Let me say that the ideas expressed in this paper are my own. The work I describe is clearly 'work in progress' and we have a long way to go before we can be confident that these notions can be applied successfully in a practical sense, especially since Victoria's emergency management arrange-

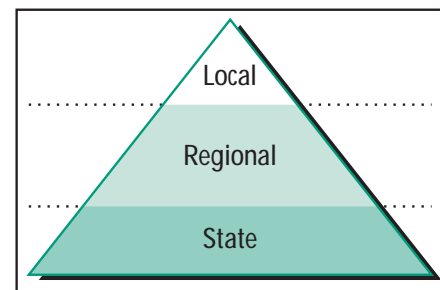


Figure 1: Community based on area or administrative unit (there is little or no differentiation of sub-groups or particular needs or service requirements)

ments are demonstrably effective in planning and action and are responsive to local needs and issues. However, we are continuing to explore these issues in the context of recent events in East Gippsland. We hope that our understanding of community, vulnerability and resilience and social needs analysis will be applicable across the rest of Victoria. We also expect to develop planning and evaluative methodologies that will further improve our capacity to plan for effective emergency management.

Community

In practice, it seems to me, community is often taken to be synonymous with the people living within a defined administrative unit—typically a local government area. Otherwise, community is most often used to either refer to all the people within a defined cultural unit (almost always a town or locality) or to refer to the population of a more or less identifiable spatial area—such as East Gippsland or north-east Victoria.

These definitions are useful in two ways. First, Government and non-government services are often provided on the basis of local government area, or town or locality. Service delivery administration therefore defines a community (even if the community includes people who are not significant recipients of services). Second, by identifying a community with a geographic area we may be thereby creating a commonality of interest that can be used for emergency management purposes.

But this argument is double-edged. Many agencies, including local government, State and Commonwealth public sector, private sector and non-government organisations do not have co-terminous boundaries. This in turn requires considerable effort to co-ordinate planning and operational activities over jurisdictions with dissimilar spatial boundaries.

But these are very blunt characterisations of community and we have to ask how they actually advance us in providing better services. In many ways the added benefit is not substantial.

This coarse grained approach may also confuse planning and operational issues with which we are required to deal by encouraging us to overlook the complexity of the groups (communities) and relationships between the groups within the relevant units of operation.

We need a more trenchant analysis of community if we are to respond to complex events such as emergencies and disasters. The complexity of disasters is central to our need to better understand communities. Disasters are events that by their nature may affect all sectors of the population and may impact on all aspects of economic and social activity. There may be differential impacts on different groups and the needs generated by the impacts and consequences may persist for long periods, while other needs may arise or diminish as time elapses.

Another type of community is that based in a hazard prone area—such as a flood plain or an airport flight path, a slope or a vegetation type shares exposure to a particular hazard—but which may share little else. The common element is a risk and a need for mitigation services and, if an event occurs, assistance measures.

We can also have communities that are based on economic enterprise, such as farming and tourist activities. Often different economic activities will co-exist within the one area and the business owners may share more than one common characteristic. Nonetheless, when disasters impact very extensive areas, the most significant common attribute for the entire area may be the economic activity.

Communities based on age are relevant to need and therefore to the provision of disaster services. Age may be especially relevant in terms of the extremes, youth and old age, or in terms of particular periods of crucial development, such as adolescence. Gender-based losses and needs can often be easily discerned and these form another basis for delineating a community, women and men may have particular requirements for services and support, especially after disasters.

Other commonly occurring causes of need after disasters include low income, disability, ethnicity and isolation.

This notional matrix (Figure 2) suggests that a person may belong to a number of different communities that will overlap but not necessarily be co-terminous. Mapping communities will therefore give a set of complex relationships, networks, hierarchies and nested groups and 'Venn diagrams' much different to the flat, homogenous geography implied by an approach based simply on administrative unit.

The range of categories of need that may be generated by a disaster is extensive, including health and wellbeing, food and sustenance, medical, shelter, income maintenance, transport, communications, psychological and social support as well as restoration of damaged bio-physical environments. Needs may occur at any system level of individual, family, group, organisation and government and may occur across levels to include one or more of these levels in the required support and recovery process.

Any affected community is likely to cross some defined administrative boundaries on which much of our planning and service provision is based. Therefore to ensure

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service effectiveness and to ensure equity and appropriateness in programs, we may have to make efforts to ensure at a very minimum that there is effective **co-ordination** between administrative units.

Given that any one administrative unit or geographic area may not be relevant to all, or even many, disaster generated needs it may make sense to plan on the basis of need (or common interest or community) instead of on the basis of administrative unit. In this sense **co-operative planning** and activity is preferable to co-ordinated action.

The point of this approach is it is not based on a broad-brush approach that conceals through its generality essential issues that need to be addressed as part of the emergency management process. Rather, it identifies with precision the communities that will require assistance, support and services.

It is not based on the (at least partial) artificiality of administrative boundaries. It is based on a functional assessment of needs that allows services to be specifically targeted.

	Aged	Poor	Farmers	Isolated	Women
Aged					
Poor					
Farmers					
Isolated					
Women					

Figure 2: example of a matrix to identify communities of need (notional only)

This functional approach has been adopted by the Shire of East Gippsland in assessing and planning for social needs over the next decade. They approached their population's needs not from the standpoint of the various demographic groups per se but from the basis of the needs people have and the services that are required to meet those needs. So community needs are assessed as health, education, youth services, housing, recreation, cultural development and special needs, rather than the needs of the aged, young etc.

The proposed approach to planning addresses the substantive issue, which is *need*, rather than being driven by the administrative basis on which services are provided.

Vulnerability and resilience

This discussion of identifying communities by function requirement (services derived from needs) brings us to the point where we need to consider vulnerability and resilience. Most of the work that has been carried out on vulnerability has focussed on groups that are, prima facie, exposed to a risk.

However, assumptions implicit in this approach have not been critically examined and a proper assessment of the basis of vulnerability and resilience has not been made.

As I indicated above most of the literature on vulnerability identifies the aged, the very young, the poor, the socially and physically isolated, the disabled and ethnic groups as being particularly vulnerable.

This approach does not drill down into the subject to try to ascertain why these groups may be vulnerable and nor does it address attributes which these groups may have which reduce vulnerability and which enhance resilience.

Importantly also it ignores the issues of differential vulnerability. This I take to embrace two concepts. Different groups may be exposed to different types of losses. Within groups individuals may be exposed to different magnitudes of loss. Vulner-

ability, like risk, is not homogeneous across social and geographic landscapes.

Most risk assessments also ignore the issue of resilience. That is the capacity that people or groups may possess to withstand or recovery from emergencies and which can stand as a counterbalance to vulnerability.

If we accept the notion of resilience then we may consider directing some resources away from repairing loss to enhancing skills and other attributes to minimise loss in the first place or to strengthen capacity to recover.

More importantly these categories of vulnerability are not obviously relevant to vulnerability and therefore disaster generated need and therefore protective and support services.

Emergency managers can do nothing about age, they cannot make the old young, or the very young more mature. They cannot modify the values and behaviours of ethnic groups. They can do nothing about teaching the illiterate to read and write.

People are not vulnerable because they are old, but because they lack resources, because they have reduced mobility. Ethnic groups may be vulnerable not because they are not indigenous but because they have reduced access to services and information because of language (and therefore communication) difficulties.

So, categorisation of vulnerability has to be on the basis of an issue relevant to the matter of a particular event or type of emergency. Further, we know that all groups of people, men and women, young and old, rich and poor, may be vulnerable in different ways. We are all vulnerable to some loss. So we need a method of more finely assessing and assigning a priority to vulnerabilities.

Equally we need to look at resilience. While the aged have reduced mobility, for arguments sake, so they may have more substantial life experience that enables them to withstand the stresses of emergency impact and the requirements of recovering. The young may not have a fully developed capacity to integrate and work through the stresses of disasters. However being young they may have additional supports (such as parents and teachers) they may possess a natural adaptiveness and they may have a longer period (compared say with the aged) to overcome loss.

What I propose is that there are certain meta-categories of vulnerability, which include but are not limited to:

- Management capacity (for example, the capacity to deal with one's own affairs and to meet one's own needs, physical or mental disability)

- Resource availability (e.g. wealth, income, insurance)
- Cultural attitudes and values (e.g. different expectations of help, religious or ethnic attributes that may require special attention or which may separate a person from the broader supportive community)
- Access to services (e.g. language barriers, literacy, geographical distance)
- Social isolation (e.g. having poor social networks, being marginalised in society)
- Significant change over a short time span (e.g. change in industry structure)
- Pre-existing stressors (e.g. previous exposure to a disaster)

People who match these categories positively may be said to have a degree of resilience.

These are types of categories with which we can deal and which we can assess in a practical and determined manner to achieve a very definite outcome. We cannot assess vulnerability on the basis of, say, age. This is meaningless in the disaster context and at best draws us to include large numbers of people, with many different characteristics, into the one broad pool.

The question arises as to how we can identify these characteristics. There is no definitive answer to this yet. Currently we have to use proxy data in many cases, which can force us to revert to the old categories of age, gender and the like to identify the need and vulnerability.

We are working to improve our capacity in this area. The significant progress we have made is in conception vulnerability in functional terms that we can address in practical ways rather than in terms that are surrogates for other needs and which cannot be addressed substantially.

This approach or way of thinking about needs gives us a tool for assessing vulnerability and applying it to a particular area, population group or situation.

Consonant with this meta-structure it may be possible to identify more specific dimensions. People exposed to the following losses need to be assessed in terms of the meta-categories to assess their vulnerability.

These dimensions of loss may include:

- death and injury
- trauma
- damage to homes
- damage to social networks
- damage to expectations, values and beliefs
- damage to the environment
- damage to business (capital, trade, cash flow and income)
- community disruption and dislocation of social networks
- damage to infrastructure

As part of the planning process we should try to match anticipated damage, such as house loss, psychological trauma and income loss, with the meta categories. In turn, this will allow us to derive a hierarchy or index of vulnerability.

It will also indicate functional needs and will show how they may extend across administrative boundaries. In turn, this may suggest a more appropriate basis for planning than on the simple and single local government administrative unit.

After an event when we monitor impacts on individuals, groups and communities we can consider indicators which measure change over time or deviation from average or expected levels, such as:

- death rates
- morbidity
- suicide rates
- mental illness
- accidents rates
- property sales
- divorce
- bankruptcies/enterprise closures

These indicators are still being developed, and they require base line data for any given area or population to maximise their utility, but we are progressing in our development of criteria which will indicate community well-being and how the status of individuals, groups and communities changes over time.

These indicators are easier to assess at the individual level. At increasing levels of aggregation it becomes more difficult to identify relevant and key factors and to measure the impact of any specific event.

Drawing out the impact of a 'spike' such as a disaster from structural long term changes, such as the change in the economic base of a community, can be difficult. In many situations disasters may accelerate negative trends and be neutral or selectively beneficial for positive trends.

Case example: East Gippsland floods, June 1998

Floods occurred in the East Gippsland Shire, in the eastern part of Victoria on 23 June 1998. There was minor flooding in the adjacent Shire of Wellington but it was of a minor and localised nature.

The floods occurred over an area of approximately 200 km by 200 km and affected urban centres such as Bairnsdale and Lakes Entrance, the coastal strip which houses where 30,000 people live as well as extensive areas of the hinterland where another 10,000 people reside.

For 2 years prior to the floods the area had experienced the worst drought recorded and this had impacted significantly on farm viability, local economic capacity, the

emotional wellbeing and strength of the local communities and the economies of the local urban centres.

The flood occurred within the one local government area and the municipality used its municipal emergency management plan for the to direct its response. The municipality worked collaboratively with the Department of Human Services and agencies such as the Department of Natural Resources and Environment (with responsibilities for agriculture, natural resource management and some infrastructure) as well as the Victorian Council of Churches, the Red Cross, Salvation Army and the Society of St Vincent de Paul, local community health centres and other local groups as well as major utility providers.

It soon became clear that the needs of the population of East Gippsland were not homogenous.

An initial issue with which we had to deal was that the municipality had been formed a few years previously from the amalgamation of four smaller local government areas. Many residents who still related, or retained a loyalty to the old areas had not welcomed this amalgamation. For the people these areas were more local, local government had been closer, more familiar and more responsive. Equally, for some people there was if not hostility then resentment to change and the amalgamated, larger local government area. This meant that, for some purposes, we were dealing with an actual municipality and four virtual (ghost) municipalities, which existed in a practical way as an outcome of local people's history, traditions, hopes and expectations of local representation.

In Bairnsdale, Lakes Entrance and Paynesville the major damage was confined to houses and to small business, and assistance was required to repair homes and to provide some financial support and financial services to these groups.

Behind the coast there are four major valleys running approximately north to south from the Great Dividing range to the coastal plain, cutting through rugged mountain terrain. Land communication east to west in East Gippsland is therefore possible only along the coastal strip and these valleys are effectively separated from each other.

Bairnsdale, the largest town, is at the western end of the municipality. Some affected areas are up to 4 hours drive from Bairnsdale and are therefore remote from services. Access to services was therefore an issue for some people. In fact for day to day services they rely on urban centres such as Delegate in New South Wales. This required recovery managers to put in place

special communication and information arrangements.

Other areas had particular social and physical infrastructure needs. In the first case, for example, childcare or hospital care were issues in some areas but not others. In the second case some areas had special requirements for roads and bridges.

Within each of the valleys drought and flood affected farmers had similar requirements for assistance in disposing of dead stock, repairing farm assets and replacing stock. But given their geographic separation different logistical arrangements had to be applied.

Within each valley there was also a group of people who had chosen an alternative lifestyle and were often referred to as 'ferals' by local farmers. These people ran small subsistence properties and had less need for farm support.

There were clear cultural differences (and at times antagonisms) between farmers and alternative lifestyles. Also each valley had small numbers of small businesses, such as local stores, motels and services stations, that required different sorts of financial assistance to the farmers.

So we have five distinct geographic areas divided by different occupational groups. Other significant divisions occurred along age lines and family lines. The average age of farmers in East Gippsland is in the low sixties and this reduced their capacity to manage their own recovery. At the same time, given the remoteness of the area families with young children often had difficulties (which were becoming apparent during the drought) of ensuring that adequate services and social contact was available for young children. The flood impact heightened these needs and made them more urgent.

At the same time there are longer term social processes occurring in East Gippsland, such as environmental degradation of farming areas, population loss from towns and the movement into debt of the farming community that all reduced local capacity to manage recovery.

The recovery process also encountered cultural values that initially restricted recovery services. There was a clearly articulated belief that East Gippsland had experienced flood and drought before and had survived these events and would therefore survive the current drought and floods. This culture of independence and self-reliance was an asset (a display of potential resilience) but it also led some community leaders to be very suspicious of assistance measures from outside the local area.

The response to this of recovery agencies

was to engage the local community in dialogue to identify needs and to learn from local people what sorts of assistance measures and delivery processes would be appropriate.

Local people were employed as community development officers and local services received supplementary funding to ensure that existing services could meet new demands and where necessary, new programs could be put into place.

The Department of Human Services, in conjunction with other social service agencies, engaged in a process of needs and service mapping which it did through a process of engaging local communities, interest groups and service providers in discussion as well as formally surveying all relevant service providers in the area.

This allowed the development of assistance measures that were targeted to particular needs and areas. The special needs of families in remote areas have been recognised and the requirements of farmers for innovative financial support to manage the future of their farms have been acknowledged by the government.

Victorian gas disruption, October 1998

The gas shortage occurred across the greater part of Victoria and was managed centrally out to DHS regions and then to local government.

Initial impressions were of an homogenous population affected by the event. However, as time elapsed the general population resolved itself into a number of distinct groups.

- people who were simply inconvenienced by the shortage
- people who had to buy additional appliances and who were without financial resources (such as the poor), people who were laid off or whose businesses were forced to close)
- those who required heating for health and safety issues (such as the frail elderly)
- those who required hot water washing facilities (such as some people with skin disorders)
- those who required a 'hospital in the home' e.g. premature babies, paraplegics)

This event was managed not on the basis of geography or of administrative unit (though local government did co-operate in delivering and co-ordinating services locally) but on the basis of need.

The response to the event was characterised by an ongoing needs assessment that examined and monitored the impact of the gas shortage and through professional knowledge, community input and direct

public enquiry, identified needs groups. From this assessment it was relatively easily in organisational terms (though made difficult by the scarcity of gas) to develop systems and services to meet the needs.

Without an ongoing needs assessment, however, existing structures and programs would have been inappropriate to support people significantly affected by the event.

The response was characterised by a high degree of initiative and adaptiveness in assessing the situation, identifying personal and social requirements, establishing criteria to allocate scarce resources and putting systems into place to deliver the resource or assistance measure.

Conclusion

We need to recognise that community and vulnerability are not simple concepts and first questions we need to ask are who is vulnerable to what, what strengths and resilience do they possess and where are people with similar characteristics located - and to continuously monitor and assess.

The essential point is that we need to recognise that community is not based just on administrative unit, and that it may make good sense in emergency management terms for communities to be recognised as often crossing administrative and political boundaries. Of course these boundaries have utility in terms of day to day delivery of services but their usefulness to emergency management needs to be reassessed.

In particular we must ask whether many units of administration are now so large, geographically and in population that they do not conform in any sensible way to notions of community or local.

From an analysis of common interests or needs we can develop a more appropriate basis for our concepts of who constitutes a community and what the vulnerabilities are and from this we can move to a more effective basis for developing services.

At the moment emergency management services are often developed in a broad-brush fashion with little regard for local difference, whether this is based on geography, occupation or some other relevant social factor. This means that services—particular in recovery—have to be developed on the run, after an event has occurred. At best this can lead to delays in service provision.

We must also accept that much of emergency management has been responsive to the issue of damage or potential damage, and has directed its efforts to stop damage occurring through structural means, protective services or recovery programs. This approach (preserving life and safety)

is obviously understandable and necessary. These programs have usually been provided to local people rather than drawing on local capacity to develop local strengths.

However, by a more careful analysis of community we should be able to identify assets and characteristics that can be used to support resilience. If we identify and strengthen these we can improve the capacity of individuals, families and communities to prevent or reduce impacts in the first place.

Identifying vulnerabilities and resilience will also allow us to identify social issues or trends that are not necessarily part of the narrow area of emergency management. Nevertheless we may be able to deal

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Where, for example, vulnerability to a hazard is a matter of poverty then we may be able to mitigate impacts through the financial redistribution programs (local tax regimes, regulatory costs, buy back schemes and so on).

The approach proposed in this paper already has some precedents. Catchment Management Authorities in Victoria manage water-related activities on the basis of a catchment and watersheds defined by function rather than by administrative or arbitrary boundary.

And efforts to achieve co-ordination across different administrative units are being improved constantly as improvements in communications improve our capacity to communicate and to exchange information in real time in diverse ways (fax, video and audio conferencing, virtual conferences), using various media (internet, email, mobile phones, telemetry, radio, satellite phones).

Further Geographic Information Systems give us the capacity to map demographic and cultural phenomena more quickly and more intelligently, and to display the results in more easily understood ways than was imaginable even a decade ago.

A crucial issue is how we identify proxies for the meta-categories of vulnerability. We have some understanding of proxy relationships with the meta-category where it cannot be identified immediately. However, we need to be creative in our thinking to develop new ways of identifying the substantial issues that need to be addressed.

Methodologies such as social planning, social audits needs analysis and social impact analysis already exist. We can refine and develop these as tools that will enable us to more efficiently understand the groups that make up the communities that we seek to work with in emergency management.

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