

Finding Appropriate Participation in Urban Planning for Reduction of Disaster Risks

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Abstract

This research paper aims to explore the potential to improve the role and effectiveness of urban planning in decreasing disaster risk. It suggests that risks associated with disasters will be reduced if certain urban planning and disaster management theories and practices are integrated, focussing particularly upon citizens' participation in the processes of planning. To do this, disaster management is studied from a "disaster cycle" approach – Prevention, Preparedness, Response, and Recovery (PPRR). Each of these stages is analysed in terms of citizens' involvement, examined through the lens of the ladder of citizen participation. A key concern is the proper use and development of citizens' knowledge regarding urban planning in so far as it intersects with disaster management and modification of disaster risks. This paper explores bushfire planning practices in Victoria, Australia alongside three international disaster management and urban planning practices. These additional cases include the following international disaster management activities: the Switzerland Avalanche prevention and preparedness program; UK flood management, particularly the floods of summer 2007; and, the USA's hurricane management approaches, particularly Hurricane Katrina, 2005. These case studies demonstrate that particular participation approaches for specific circumstances need to be selected to yield improved disaster risk reduction outcomes delivered via planning systems. The paper concludes with directions for further analysis needed to ensure that appropriate participation types are applied for planning and disaster.

Key words: urban planning, disaster management, citizens' participation, Australia, international

Introduction

Our planet is a dynamic system, and one of the changes that we currently face is anthropogenic climate change. The challenge for human systems today is to either adapt and to limit harm, or to risk much more severe consequences by not adapting in the near future. Existing physical and social processes generated the climate changes we currently face, and they will have effects for decades (Leary, 2009). Along with social impacts, climate change will bring increasing temperatures, growing numbers of extreme weather days, rises in sea levels, melting of permafrost, and changes to wind patterns, to name a few. These dramatic changes in climatic conditions will increase the number of natural hazards internationally (Intergovernmental Panel on Climate Change Working Group II, 2001). Considering that many people seek to live near environmental assets, such as bushland, forests, mountains, water bodies, and other natural features, it is likely that many more will be exposed to greater risk levels over time.

One way to reduce the numbers of disasters and the consequences associated with them is through a combination of practices, among which one of the most powerful tools is urban planning (Godschalk and Brower, 1985, Burby, 1998). While urban planning has the potential to prevent disaster events by locating development in appropriate spatial areas, even if disaster managers and urban planners create appropriate plans for various disaster scenarios, human factors will continue to impact significantly on planning processes and outcomes carrying ongoing risks. For example, if community members are not aware of the appropriate timing and means of evacuation during the onset of a hazardous event, prior plans, however carefully developed, may well be useless and not able to mitigate risks. Communities must be aware of the disasters and Disaster Risk Reduction (DRR) processes relevant to them, just as DRR processes can benefit from community knowledge. One means of increasing and managing community engagement is the involvement of citizens in the separate but often closely linked processes of disaster management and urban planning. In this paper, selected examples of the mechanisms for undertaking participation in four countries are documented and analysed: the United Kingdom; Switzerland; the United States of America; and, Australia. It is argued that, although planning for various disasters might differ, there is a tendency for certain participation types to be matched to particular urban planning and disasters risk reduction types internationally.

The “Correct” Participation in Disaster Risk Reduction?

Before considering whether it is even possible to identify the “correct” or appropriate level and type of participation in Disaster Risk Reduction (DRR), we need to identify the diverse nature of disasters, and how urban planning approaches might mitigate their effects. *Disaster* is defined as a result of hazards, either natural or human-made, causing significant physical and economic damage, loss of lives and dramatic change to the environment, due to the ability of the affected community to cope with its impacts being exceeded (Quarantelli, 1998, Stenchion, 1997, United Nations for Disaster Risk Reduction, 2009). A *hazard*, on the other hand, is the situation and source of harm possibly, but not necessarily, leading to a disaster in a vulnerable community, such as a bushfire (Alexander, 1993, Long, 2011, McCamish, 1997, Stenchion, 1997). This understanding of disasters shows that communities can be exposed to hazards, but that the reduction of risks associated with them may reduce the likelihood of disasters eventuating. Doing this requires approaches and collaborations between various disciplines and agencies, including urban planning. However, until recently, disaster or emergency management has not been identified as having the potential to be a “uniting” discipline in this way (Haddow et al., 2011).

One approach to natural hazards is based on the “disaster cycle” consisting of four stages – Prevention, Preparedness, Response and Recovery (PPRR) as a means for understanding different modes of action to reduce disaster risks (Alexander, 2002, Clary, 1985, Godschalk and Brower, 1985, Gordon, 2002, Haddow et al., 2011, Mileti, 1999, Quarantelli and Kreps, 1972). This approach was developed in the early 1990s from the second national assessment at the University of Chicago in response to the decade for the Natural Disaster Reduction (Chapman, 1999, Mileti, 1999), and remains the basis (albeit often in modified form) of national approaches to disaster management in several countries, including Australia. Table 1 outlines the main goals, objectives, timelines and examples of PPRR. The examples of actions provided within each stage suggest that urban planning practices and approaches have considerable potential to reduce risks associated with disasters, mainly at the prevention and recovery stages, although planning actions typically have implications for each stage.

Table 1 PPRR Disaster Management Approach

(Source: adapted from Alexander, 2002, Blaikie, 1994, Burby, 1998, Clary, 1985, Godschalk, 2003, Godschalk and Brower, 1985, Gordon, 2002, Haddow et al., 2011, Lewis, 2006, Mileti, 1999, Nelson, 2002, Renne et al., 2011, Stenchion, 1997, Wang, 2012)

	Prevention	Preparedness	Response	Recovery
Goal	Avoid hazards and to reduce vulnerability of a community to decrease possible impacts	Prepare a community for the possible disaster when it was not illuminated	Provide help to the community immediately during or after disaster strikes	Recover the community or system to less vulnerable situation and less hazardous situation than that which resulted in disaster and extent of its results
Objective	Long-term; reducing or totally illuminating risk of the community from the natural disaster	Assess vulnerability of the community to specific disaster and level of the risk.	Reduce the losses and impacts of the disaster	Long-term plans along with the prevention stage
Timeline	Applied before the disaster occurs or after one if follows recovery process	Prior to the disaster	Immediately before, during and after the disaster	After the disaster strikes, before the prevention process, “window of opportunity”
Examples	Prevention actions can be structural or non-structural—build in environment, land-use, insurance	Evacuation plans, warning systems, testing the emergency response equipment, education of the citizens about possible threats through various media channels	Mobilizing of the various emergency services in the area exposed to the disaster	Reconstruction and rebuilding steps.

Although some urban planning approaches and techniques intuitively “parallel” elements of the PPRR cycle, the question remains if and how the two practices are integrated. Accordingly, it is necessary to clearly define urban planning processes and practices. A key starting difficulty is that urban planning is based on complex and often diverse theories, which might be applied to a range of different planning types and settings. For the purposes of this paper, however, functional definitions can provide clarity: regulatory planning is understood to include both land use and legal regulation; strategic planning is overall management of the “direction” taken; vision-based planning is a process of determining broad goals; designing and representing planning is setting out detailed future images of the community; and, agenda-based planning outlines the projects and specific activities required to reach specific goals (Hopkins, 2001). These planning types might be used singly, or in combination as a suite of planning controls. For example, changes to community strategies might lead to changes in overall design layout and new regulations for development control being established. Likewise, disaster management includes a series of similar steps aimed at the creation of DRR plans. Therefore, this paper integrates these two processes to understand the ways that disaster resilient communities can be developed. Table 2 provides a more detailed description of these processes, with typical “parallel” processes found in the literature of urban planning, and most closely aligned with common processes (March and Henry, 2007).

Table 2 Comparative table of the Disaster Planning and Urban Planning

(Source: adapted from Country Fire Authority (CFA), 2012, Alexander, 2002, Chapman, 1999, Eccles and Bryant, 2006, Gordon, 2002, Levy, 2011, Quarantelli and Kreps, 1972)

Disaster Planning	Urban Planning
<i>Preliminary research</i> – identification of types of hazards and potential impact on the chosen area	<i>Visioning</i> – establishment of goals for future development and addressing communities' issues.
<i>Exposure and vulnerability analysis</i> – identifies possible exposed areas and population to disasters. <i>Risk analysis</i> – identifies possible risks in the targeted area <i>Analysis of the response resource</i> – identifies available sources for the response to disaster.	<i>Data collection</i> – gathering information and its analysis to identify and predict future conditions of the community <i>Objectives</i> . This stage aims to identify objectives of the future plan
<i>Plan creation</i> – creation of plans and alternatives based on the identified risks and objectives	<i>Alternatives</i> – creating alternative plans to ensure future implementation of various goals.
<i>Decision-making</i> – choosing of the development plan based on the needs and goals of the community	<i>Selection</i> – evaluation of alternatives to ensure most efficient and appropriate plans to be implemented, creation of 'base' for future plan <i>Plan preparation</i> – creation of plan based on previously collected data and selection
<i>Implementation and review</i> – the released plan will have specific programs with the specific timeframes for implementation, the priority of the programs are reviewed annually to ensure that most important are prioritised. The monitoring and revision of the plan are determined by the implementation process and must be performed regularly.	<i>Implementation</i> – turning plan into official policy through its adaptation by community and government. <i>Monitoring</i> . The adopted and implemented plan is not a permanent document; it might change over the time depending on the needs of the community. For fast and growing communities, the plans are usually revised every 5-10 years to ensure most efficient plan has been adopted

The integration of process between the disciplines of planning and DRR potentially allows for creation of liveable and disaster resilient communities, consisting not only of fully engineered responses (such as fire-proof bunkers in wildfire prone areas) but the whole range of mechanisms that affect risk in a given place. In addition, collaborative work between professionals potentially ensures deeper and clearer understanding of issues and concerns of both sides. As an outcome, plans will include DRR practice at their "base".

Aside from physical dimensions, any community comprises inhabitants and needs to be attractive for people for a range of reasons that are often inter-related with disaster considerations (e.g. natural bushland aesthetics, but increased fire risks). Citizens' involvement is one of the ways of ensuring that views and concerns of residents are addressed. A question arises here: "what degree and type of involvement is appropriate?". Stakeholders, developers and citizens are not necessarily disaster management or urban planning professionals. Their decisions on matters impacting upon DRR might result in less than ideal disaster management, particularly with disasters that seem more abstract, unlikely, or unchangeable to community members. Thus, the full dimensions of citizens' involvement and power requires definition in terms of scope, type, potentials and limits. For different communities and disasters such involvement might vary according to circumstance. For example, permanent communities are often more likely to be aware and supportive of actions that reduce potential disaster impacts upon their lives and properties if they have memory of previous events. In contrast it may be more difficult to introduce changes with a disparate community of holiday home owners. Similarly, communities frequently exposed to hazards are more likely to follow DRR. Accordingly, the identification of participation "appropriate" to a range of circumstances is essential for effective DRR.

As discussed at length in the urban planning participation literature, citizens can be involved in planning processes at different stages and with varying degrees and types of involvement varying from manipulation by officials, to empowerment of citizens (e.g. Arnstein, 1969, Kroman and Arnstein,

1975, Laurian and Shaw, 2009, Potapchuk, 1991). These 'Ladders of participation' approaches outline categories of citizens' involvement in the planning process. Techniques and strategies for participation will vary depending on the degree of involvement (Healey, 1997, Sanoff, 2000). To define the appropriate degree of involvement for combined practices of disaster management and urban planning, a synthesis of Arnstein and the International Association for Public Participation (IAP2) ladders has been developed below at Table 3. The choice is made because the spectrum of IAP2 is most aligned with the types of participation associated with the investigation being carried out in case studies outlined below. Arnstein's ladder had additional critical descriptive levels, including manipulation and therapy categorizing instances in which government enforces opinion upon citizens, which provided a base for critique. While we acknowledge that these aspects of participation do exist, these elements have been excluded in this paper since they are outside the immediate scope of the research which is more descriptive. Rather, we have used the more normative ideal type presented in the IAP2 model.

Table 3 Degrees of participation, their goals and tools

(Source: adapted from Adams, 2004, Arnstein, 1969, Beutel and Dalton, 2001, Sanoff, 2000, Innes, 1995, Innes, 1996, Innes, 1998, Healey, 1997, International Association for Public Participation 2, 2000, Lumsdaine and Lumsdaine, 1994, Okubo, 1997)

Type/degree	Goal	Method
Manipulation and therapy	Provide public with information on the already chosen plan, no channel for feedback, aims to gain public support	Public and community meetings, public hearings
Informing	Provide public with adequate information to facilitate their education about existing problems and issues, alternatives and solutions; public is informed	Web-sites, Fact sheets Local newspaper, Newsletters, Progress reports, direct mail, Public and community meetings, Public hearings, Surveys and questionnaires, Focus groups
Consult	Channel for feedback from public on analysis, decisions and alternatives; opinion of public is considered but not necessary included in the decision-making process	Face-to-face interactions, Delhi process, focus groups, public meetings and hearings, surveys and questionnaires
Involve	work with public through the planning process to ensure clear understanding and consideration of their concerns and ideas; including opinions in the planning process and informing public regarding the decisions	Workshops Brainstorming Charretes Games deliberative pooling
Collaborate/ Partnership	Creation of partnership with public in the decision-making process; direct advise from the public is incorporated in the decision-making process to the possible extent	advisory committees consensus building participatory – decisions making policy communities
Empower	Final decision is given to public.	Ballots, citizens' juries, delegated decisions, studies of impact assessment

The cases reported on below are derived from policy analysis and field work during 2013 including a number of interviews with planners and disaster professionals in each location. The results reported below seek to describe and discuss the type of participation undertaken in terms of the type of urban planning and phase of DRR being undertaken in each case.

Are there circumstances when we should just *Inform*?

The premise of this paper is that the most appropriate degree and type of participation involvement will depend on the strategies, techniques and overall goals and objectives of the planning process (Rosner, 1978), and indeed on cultural circumstances. This suggests that in the case of

planning for disasters, the appropriate degree of participation might vary from other planning processes, for example, transportation planning and economic development.

Despite a predilection among many academics that can often assume that various forms of participation are inherently desirable, for DRR, there appear to be cases where little participation has occurred, and further, that this may have led to successful outcomes. The examination below suggests that while it seems reasonable that communities are given an opportunity to express opinions on plans and to have control, it also shows that community control is usually only being provided to the extent that it will not lead to the creation of increased risks, or a disaster prone community. Therefore, an argument could be made, even while contentious, that there will be some situations where there is no real role for extensive community empowerment. This would be in situations where timely, technically complex or far-reaching decisions are required for DRR outcomes to be achieved. In this sense, professionals' roles become one of ensuring that communities are aware of decisions and any impacts this will have. This might lead to an assumption that the most appropriate participation type in some instances might be *informing*, including distribution of DRR related knowledge and its further facilitation among citizens. While some might argue that such approach is rather a "false" participation, the appropriate knowledge and ensuring that it is facilitated may actually allow the community make informed decisions based on the things under their control. Alternately, when knowledge is facilitated and appropriate to the risks being examined, it may be appropriate to provide a community greater power and opportunities to make more informed decisions.

Considerable proportions of the southern part of Australia are extremely fire prone. In particular, the southern parts of Australia, where highly fire-prone native vegetation is near to population centres, are one of the dangerous fire prone places in the world (Williams et al., 2012). A clear need for effective planning for bushfires in this area exists, including via urban planning mechanisms. One of the most devastating disaster events in the history of the country occurred in the summer of 2009 during the bushfire season, resulting in death of 173 people and loss of about 2000 houses. After the event Government created the Victorian Bushfire Royal Commission (VBRC), which sought to identify failures over several disciplines, including urban planning (Victorian Bushfires Royal Commission, 2010). As one of the investigation results, the planning system, based local government development control processes, has been updated with Bushfire Management Overlay (BMO) and Bushfire Attack Level (BAL) acting as key decision making mechanisms.

The BMO applies to land which might be significantly affected by bushfire and identifies the need for a planning permit for certain development considering bushfire protection measures. Department of the Planning and Community Development provides free land reports with various overlays including BMO, and outlines list of further actions (Department of Planning and Community Development, 2013). BAL provides more detailed information on how individual house should be constructed to withstand fire. Appropriate building measures allow sheltering in the building in cases when residents are unable to leave premises. BAL is calculated based on the topography of site, Fire Danger Index, vegetation and proximity to other buildings (Victorian Building Authority, 2011). The State Planning Policy Framework (SPPF) outlines the general requirements for the bushfire planning in Clauses 13.05 and 13.05 -1 Bushfire and Bushfire planning strategies and principles respectively (State Planning Policy Framework, 2011a, State Planning Policy Framework, 2011b). These guidelines establish that human life should be prioritised in case of the hazard, and that development should respond to climatic conditions, topography and vegetation to identify possible bushfire hazard on the site. This means that bushfire planning is now closely integrated with disaster management practices in Victoria and aims to prevent the hazard from becoming a disaster by minimize risks and losses (State Planning Policy Framework, 2011b).

In terms of citizen and community involvement, two notable features stand out in this case. One, is it that almost no prior consultation occurred in the preparation of the new planning standards. Local governments were informed of the new standards during the period prior to the state level Victorian government's adoption of the new planning standards (Victoria Planning Provisions VC83, 2011). However, this allowed for no formalised feedback that modified the standards but was undertaken to inform them so they would subsequently be able to administer them, rather than to have any influence over content. Further, the new planning provisions specifically preclude most ongoing objection and appeal rights for citizens. While additional research is required, it would seem that in the post-Victorian 2009 bushfire case, that the prior processes of the Victorian Bushfires Royal Commission provided sufficient legitimacy for the introduction of far reaching new measures without further detailed consultation. Further, the highly technical mechanisms developed for appraisal of bushfire risks on individual sites suggests, in this case at least, that the vast majority of citizens would

provide limited additional value to the processes, while unnecessarily hampering processes already considerably more time consuming, costly and complex than those previously in place.

While focussed upon a very different hazard, a successful example that is also based upon informing styles of participation is the Swiss Avalanche Prevention and Preparedness program. A key feature of this example is its integration of urban planning and disaster management, drawing together the plan and prepare stages of disaster mitigation with forward urban planning processes. Switzerland has a variety of climatic and geographic features resulting in the presence of various hazards, among which are avalanches (Wilhelm et al., 2001). The prevention program for this hazard includes not only “standard” engineering approaches such as defence structures, modifying the terrain, wall reinforcements, special codes and standards for buildings and design, but also such spatially oriented regulatory measures as land use and zoning (Alexander, 1993, WSL Institute for Snow and Avalanche Research SLF, n.d.), based on hazard mapping.

According to Switzerland’s Federal Law for Land Use, hazard mapping must be included in land use planning for each of the 26 Cantons. The topography of the country significantly influences the spatial distribution and nature of the hazards, and each of the Cantons determines what hazard mapping is to be included into their plans (Swiss Disaster management professional, 2013, European Environment Agency, 2010). At a national level, this involves devolution of almost absolute power to the Cantons. This power is then essentially in the hands of local officials and does not mean that citizens are equally empowered in decision making, except via the processes of representative democracy.

In the Swiss practice of hazard mapping and land use planning, upon completion of the hazard map and its subsequent validation by Cantons, a public inquiry opens allowing land owners to examine and to appeal maps if they consider that it will have negative impacts on their land (Swiss Disaster management professional, 2013). In terms of participation theory assessment criteria, this matches with “informing” and “consultation” styles of participation. The “informing” approach is favoured in this case, since the bulk of participation was oriented to simply informing the entire community regarding proposed plans. No real redistribution of power occurs, and only those who might be potentially affected by the proposed changes have an option to appeal, a rather limited consultation. While some might argue that this is a level of “involvement” more than just consultation, it should be noted that the right to appeal does not necessarily mean that any opposition will be effective on citizens’ part. Rather, it is an opportunity to react to or reflect on the mapping’s accuracy. Moreover, while some might argue that citizens are included in the decision making process as they have an opportunity to appeal, consultation is limited not only because limited parties can appeal, but the plan itself is prepared solely by professionals.

Another case which raises the question of whether it is more appropriate to simply inform the public as the main participation is related with planning processes undertaken after Hurricane Katrina, 2005. This case remains one of the most devastating disasters in the USA, with major negative impacts occurring in New Orleans, LA (e.g. Olshansky, 2006, Comfort, 2006, Wolshon, 2006, Beriwal and Moore, 2006, Kiefer and Montjoy, 2006, Committee on Homeland Security and Governmental Affairs, 2006, Beriwal, 2005). This event was examined in terms of the impacts that prior urban planning and emergency planning impacted on Response during the course of the disaster itself, seeking to understand how decisions influenced the ability to respond during Katrina, and changes in similar actions and decisions in 2013.

Response during this event focussed primarily upon mandatory evacuation processes, proclaimed by the Mayor of the city. However, the entire city could not be evacuated due to a number of complicating factors. Among them was a lack of transportation, that low mobility groups were not provided access that many individuals simply refused to leave the premises, and breakdowns in communications. As a result, about 1800 people remained stranded in the city when the levee breached and the city was flooded. The Mayor proclaimed the football field, Superdome, and Convention Centre as hurricane shelters, although none of these were intended as, or prepared for, this in advance (The Department of Homeland Security, 2006). Subsequent evacuation procedures from this time revealed further weak points of evacuation planning, demonstrating that the various disciplines (planning, medical aid, military forces, etc.) were not integrated appropriately in developing and maintaining their prior preparedness activities to facilitate successful evacuation for the community.

At the time of data collection for the study, evacuation plans for the city of New Orleans have been significantly changed and updated, including integration with urban planning land use allocation

processes. According to the new plans, the use of evacuation shelters has been ceased (Savidge, 2006). Instead, the city government issued a plan with 17 pick-up locations for citizens' in case of emergency, of which four are designated for senior centres (City of New Orleans, 2013a). Information is available for both citizens and tourists on the city web site and in local newspapers. Additionally, tourists and residents can register online for evacuation and request a vehicle to assist them when needed (City of New Orleans, 2013a, City of New Orleans, 2013b). In comparison with the pre-Katrina evacuation plans, these pick-up locations were not previously clearly identified, moreover, during the disaster the general public sought shelter in facilities unsuitable for this purpose – particularly seniors' centres and hospitals. Interviews with key personnel indicate that these changes have been undertaken by professionals, with citizens being informed after the event via media channels, public meetings and newsletters. Subsequent to these changes, Hurricane Isaac in 2012 demonstrated that the community of New Orleans *is* informed of the actions which need to be taken in case of the hurricane approaching city, and that these appear to be largely effective (ABC News, 2012, City Planner 1, 2013). These actions taken by the government have been strictly informative; the community was not consulted regarding changes to response planning for hurricane hazards prior to their introduction. This demonstrates appropriateness of this informing style of participation in cases such as this one.

When *Consultative* participation might be more appropriate?

In contrast to the previous examples, the recovery stage of the **UK 2007 floods** were characterized by a prolonged and highly visible response from the government. This case suggests that certain circumstances give rise to the need for more consultative approaches. The UK 2007 floods were the first time in the history of the UK that citizens had been significantly included in the recovery process (UK Flood professional, 2013). After unseasonal timing of flood events in unexpected locations (Pitt, 2008, Blackburn et al., 2008, Environment Agency, 2007) data were gathered not only from professionals and agencies, but also from a range of citizens. In particular, the government created a four month long, 60 event 'Flood Surgeries' process to seek citizens' opinions as to what they think went wrong and what should be changed in the development and services in relation to flood management. The majority of responses included concerns with a lack of drains and river maintenance, excessive development in floodplains and long timing of completion of flood defences (Environment Agency, 2007). As a result, a series of changes have been implemented over the period of 2007-2013, including in urban planning practices. These changes in urban planning practices were mainly legal and regulatory in nature, and involved passing of laws or updating policies that provided for the provision of a number of flood defence mechanisms and land use controls to complement these (Department for Environment Food and Rural Affairs, June 2009, Department for Environment Food and Rural Affairs, December 2009).

Consultation appears to be the main approach used in the participation phases of the UK flood case, centred upon the processes of flood interviews. Citizens were asked to share their ideas and concerns with officials and professionals via focus groups, workshops, letters and internet based surveys. A government report investigating the event and changes needed to prevent it in the future argued that all recommendations from citizens were reflected in recommendations for changes, which in its turn have been approved by Parliament (Department for Environment Food and Rural Affairs, 2008). Consultation levels still might be considered limited as the processes of gathering information did not include interactions with everyone from the community. These changes mainly involved regulatory planning implemented via changing policies or enforcing laws. Some of the regulations led to other planning types being used for implementation, such as changes to design standards, new local planning visions and strategy statements, which suggests that planning processes are complex and might lead to additional subsequent actions. Moreover, inclusion of the changes in the planning process alongside other disciplines of the UK Government reviews demonstrates how urban planning and disaster management can be integrated. It also demonstrates that the government is adopting new policies and changes based on the decisions and opinions of professionals, and included the community opinions and views on the problems. This, however, does not represent how the community sees this process and if they think it is actually fair one. To identify this, additional studies are needed.

According to the assessment criteria stated in the previous sections of this paper, while participation in this case included a strong informing phase this was *only* after the significant amounts of prior consultation. It would appear that the informing phases were used and accepted by the public due to the prior relatively open processes used prior to introduction of new practices and subsequent citizens' information and education about changes. The UK 2007 floods case identified that citizens *can* be included in the process of decision making on the consultation stage, final decision making

powers however, still stayed in the hands of professionals. This serves as evidence that credence might be given to the argument that it is appropriate in cases such as this one for professionals, who are more aware of the appropriate DRR tools and techniques than regular citizens, to be given greater power than conventional participation critique might suggest.

Conclusions

The description above shows that, in each case studied, a range of circumstances led to particular participation strategies being adopted in the pursuit of DRR outcomes linked with urban planning approaches. The circumstances of each case appear to have led to useful approaches being used. However, it is noted that each of the participation strategies employed was significantly removed from ideals of “full empowerment”. While additional ongoing research is required to draw conclusive findings from these cases, a range of highly pertinent preliminary research inquiries can be generated at this time. The first is that it would seem that there are many situations where limited participation is appropriate, particularly in the case of Disaster Risk Reduction. However, in parallel, each of the cases examined includes a very strong “Informing” phase, and this element would appear to be vital to the success of each of the planning and Disaster Risk Reduction approaches undertaken. This reflects the need for citizens and a range of agencies to understand the implications of change and impacts upon their own activities in achieving DRR outcomes. The finding that increased consultation levels is used only in some successful cases of Planning for DRR, then raises subsequent questions. Primarily this is: “what are the circumstances that lead to DRR benefits being derived from participation being increased beyond informing only?”.

The paper also identifies some preliminary propositions that can inform further research into participation and planning for DRR. Examining the range of citizens’ involvement in the process of planning for disasters varying from informing to limited consultation and limited involvement suggests a number of principles that might be examined. For instance, Informing-only approaches appear to be most appropriate in circumstances where there is cultural acceptance of strong governmental actions and trust in experts. The Swiss case is an example where, by devolving control to the Canton level and using expert knowledge, considerable certainty was reached regarding DRR outcomes, particularly with appeal processes allowing the possibility that mistakes could be identified and rectified if they did occur. This means that professionals with sufficient data and depth of understanding of threats and risks associated with disaster events were allowed to take actions to prevent disasters. In the Victorian case, the prior “openness” of the extensive Bushfire Royal Commission allowed for a vast amount of inputs and learning from prior events to be drawn together. This allowed for subsequent action to introduce new regulatory controls in a quite decisive way, where it appears that further citizen input would add little to the quality of outcomes during both plan making and implementation phases. In the post Katrina hurricane case, the political climate appears to have been such that citizens had an appetite for decisive action being taken, allied with a need for decisions to be made at the city-wide level so that over-arching assessments of risk could be undertaken. The UK case provides an indication of the reasons that might be developed for enlarging the scope of participation, when the knowledge of experts is insufficient due to new circumstances emerging, when fundamental understandings across a range of agencies needs to be realigned, and when the culture and community appetite demands a greater sense of input and recognition of knowledge.

So while this paper does not argue that that any particular participation types should be privileged over others, it does suggest that clear understandings of local circumstances need to be matched with the outcomes sought for successful DRR outcomes. Additional studies are required to identify the most appropriate participation type for each individual community, while this paper provides some existing successful examples which might be adapted and further researched.

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