

Linking rural community livelihoods to resilience building in flood risk reduction in Zimbabwe

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ABSTRACT

The increasing occurrence of disastrous flooding events and the mounting losses in both life and property values in Zimbabwe have drawn attention to the flooding situation in the country, especially the rural areas. This article explores the resilience of vulnerable rural communities to flood risks associated within increasingly frequent and severe events linked to climate change. Starting by reviewing the current literature on rural livelihoods, resilience and vulnerability research, the paper argues for a coordinated teamwork approach in flood risk mitigation in rural areas. The paper concludes with several recommendations for enhanced resilience to flood hazards.

KEYWORDS

resilience, livelihood, vulnerability, flood risk

Introduction

This paper advocates the capacity building of rural communities against negative flood impact through livelihood resilience building and proposes a set of resilience strategies to mitigate the negative impacts. The question of how vulnerable communities, dependent on natural resources, can increase their resilience to flood hazard shocks, stresses, and crises is central to the argument. Resilience strategies in the context of the capacity building of marginalised rural communities in different aspects of resilience are advocated. Inevitably, it is the marginalized groups that suffer most when floods strike (Madamombe, 2004; Gumbo, 2004; Vlachos, 1995). The main question of the study is: what resilience options for flood risk reduction exist in rural areas? This question is answered by developing linkages between livelihoods, vulnerability and resilience building.

The link between livelihoods and disaster exposure in rural areas

The link between disaster exposure and access to resources has been well documented elsewhere in disaster literature (Abdellati *et al.*, 2003; Adger, 2000; Brooks, 2000; Berkes, 1989). These dangers include increasing the likelihood of populations living in more hazard prone areas, having less protection against disaster impact, lowering coping capacity during and after the hazardous event, as well as negating many of the development gains achieved prior to the disaster event (UN International Strategy for Disaster Reduction, 2002). As a result, successive disasters in different parts of the world have demonstrated time and again that the impact of a disaster in terms of life, assets, and potential for recovery is borne disproportionately by many countries and within them by the poorest segments of the society (Alvarez, 2006; Vlachos, 1995). Natural disasters, particularly flooding and drought, impact directly on rural communities in Zimbabwe (Shumba, 2000; Madamombe, 2004; Gwimbi, 2004). This has threatened food security and family wellbeing in rural areas where the resource base on which they rely has been undermined (Shumba, 2000).

Carney (1998) as cited by the International Institute for Sustainable Development (IISD, 2003) defines livelihood as comprising the capabilities, assets and activities required for a means of living. Central to this definition are livelihood assets. According to IISD (2003), livelihood assets are the means of production available to a given community that can be used to generate material resources sufficient for the community's survival. In the definition, the five forms of livelihood assets are given as natural, social-political, human, physical and financial capital. A livelihood is said to be sustainable if it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. The more asset bases a community have the more sustainable its livelihood. Priorities supporting poverty reduction through the sustainable livelihoods approach need to be supported in the disaster context, so as to strengthen the links between the sustainable livelihoods approach and vulnerability reduction. Vulnerability, according to Brooks (2003), is the likelihood or probability of harm to the system, such as for example declining quality of life or loss of lives. The proportion of human lives, assets, and economic activity that could be affected in a given place should a given disaster occur is seen as a phenomenon that is related to level of exposure to risk (Carney, 1998; UNDP, 2002).

While all assets are important for rural communities, natural resources are undoubtedly the most important (Carney, 1998). In Zimbabwe, rural communities

are particularly dependent on natural resources (Gwimbi, 2004; Shumba, 2000) and are therefore severely affected by deteriorating environmental conditions and factors limiting access to them. A study by Gwimbi (2004) on the 2000 flood impact in the Lower Muzarabani District in the Zambezi basin showed a significant correlation between flood impact and the geographical location of the communities in the floodplain. Generally, significant correlation coefficients were noted between flood impact variables such as crop damages, dropping out of school by children, flooding of homes and flood related illnesses and death, on the one hand, and proximity to the flood plains. Disease outbreaks were associated with the disruption of the clean water supply (83%) and persistence of water in the low-lying areas, which created breeding places for mosquitoes (96%).

Despite the high impact of floods on variables such as crop damage (80%), destruction of homes (55%), high incidence of illnesses related to floods (73%) and high absenteeism from school (76%), more than 70% of the respondents in the study had no plans to migrate from the lowland areas to high ground. Generally the number of households reluctant to move from the floodplain increased with more assets owned by households in the area. The state of vulnerability of rural people is aggravated by their limited access to essential resources (UNDP, 2002).

In Africa's rural areas, vulnerability to floods is closely linked to access to resources because these are a principal means by which people reduce their vulnerability to famine. In southern Africa for instance, climate variability is a major problem for many rural communities where the majority of the population still live and are directly and indirectly dependent on rain-fed agriculture. An example of this is the widespread flooding due to Cyclone Eline in 2000 over Mozambique, South Africa, Zimbabwe, Malawi, Botswana and Namibia (Vaz, 2000). The cyclone-induced floods in the Zambezi Basin claimed the lives of 700 people and left more than 500 000 people homeless and caused over US\$1 billion of infrastructural damage (Wamukonya *et al*, 2001). In Zimbabwe the floods were the worst in many years and highlighted the significance of disaster management at community level. The death toll was increased by survivors who were left to suffer a lack of food and clean water and a malaria outbreak stemming from mosquitoes swarming and breeding in the floodwaters (Shumba, 2000).

Floodplains, as traditional areas of special importance for rural communities, offer favourable conditions for human settlement, economic development and assets for sustainable livelihood support. At the same time natural hazards threaten these areas as hazardous floods go hand in hand with economic and other liveli-

hood activities (Adger 2000; Rolfe, 2006). The limited capacity of local communities to deal with the resulting disasters is one of the major challenges facing local authorities in the region.

Flood risk resilience options available for rural communities

The context that makes flood resilience relevant is climate change. Alarming evidence from around the world of increasingly frequent and severe weather events cannot continue to be treated as if there were no link between the events and the occurrence of disasters such as floods (United Nations, 2000). Climate change is the world's greatest long-term challenge (Berkes and Jolly, 2002), and addressing it needs both political will and public support, including marginalized rural communities themselves.

In southern Africa, for example, countries such as Mozambique, Malawi, Zimbabwe, and Zambia have many areas that suffer from periodic floods and cyclones, often on a disastrous scale. The question of what is going wrong, and what lessons can be learnt from the disasters, puts resilience building and other disaster mitigation measures under scrutiny. The effectiveness of these forms of flood mitigation measures is tested in terms of how they persuade vulnerable communities to adopt self-protective behaviours before the onset of floods. While analyses of the risks and vulnerabilities of communities hit by floods have been conducted elsewhere (Gwimbi, 2004; Madamombe, 2004; Ellis, 2000), many questions are still raised in terms of what can be done to minimize the negative impact on communities' livelihoods. For example, how resilient would the communities be if the floods were to strike again? Are there strategies in place and if so who is responsible for their dissemination to the public? What information is encompassed in the resilience building? Are the strategies accepted or ignored by the local communities and, if ignored, what are the reasons? Brooks (2003) argues that the role of the public needs to be recognised in resilience building because, while the technical aspects of mitigation measures are important, their acceptance by the public should not be underestimated. For a community to be resilient, its members must have the capacity to bounce back if a disaster strikes (Walker *et al.*, 2004).

The resiliency concept needs to be better understood contextually before practical implications can be drawn about building resiliency in communities.

The term resiliency generally refers to those factors and processes that limit negative behaviours associated with stress and result in adaptive outcomes even in the presence of adversity. Rose (2004), for example, defines resilience as a process of,

or capacity for, or the outcome of successful adaptation despite challenging and threatening circumstances.

Kulig's (2000) view is that disaster risk reduction should focus on building resilient communities, rather than merely responding to natural disasters. His argument is that there is a need to address the causes of vulnerability, and consider doing so as an investment towards building resilient communities that will have the capacity to face disasters in future. The resilience paradigm sees communities as the focal points when dealing with the challenges associated with shocks and stresses resulting from a hazardous event (Rolfe, 2006; Kulig, 2000).

Trosper's (2002) view is that, to be resilient, communities must generally demonstrate the ability to buffer the disturbance, self-organize before, during and after the disturbance, and learn and adapt to the disturbance. Resilience strategies should imply communities not only being able to cope and recover but also changing to reflect different priorities arising from the disaster. This can be in the form of building hazard-resistant structures, adaptive social behaviours, and dissemination of early warnings, among other strategies (Pelling, 2003). Resilience literature also generally affirms that the concept should encompass not merely surviving, but thriving and deriving benefits from the stressor as well (Adger *et al.*, 2005; De Bruijn *et al.*, 2003; Rolfe, 2006).

The critical question is then: what livelihood options are available to communities that can enable them to become more resilient to flood risks while improving their living standards? The options are many and varied.

Providing early warning information and advice to households on how to respond to flood risk is one important resilient strategy to reduce risks to people and property. It has the potential to play an important part in ensuring that the households adapt well to the negative impacts of climate change. Without such measures, households living with flood risk may have little option but to suffer the consequences of flooding again and again. Households are more likely to participate in their community when community leaders encourage active involvement and they believe their contributions and ideas are valued by community leaders, as well as seeing the benefits of being involved for themselves, their children and the entire community.

Alvarez (2006) is of the view that the participation of local people is important in designing and planning the processes of flood risk management particularly with

respect to policy measures. For that reason, he calls for the enhancement of indigenous knowledge systems in disaster preparedness especially flood risk communication among local communities. For example, a local flood warning system can empower the local people, promote self-reliance and encourage participation by local people to mitigate or prevent flood losses and damages. His argument is that the tendency to impose 'first world' disaster management systems without regard for indigenous cultures has led to disaster plans being regarded more as symbols than as practical tools by local communities. Community participation and application of local knowledge has the advantage of positively addressing the local socio-economic concerns. It will also empower members with knowledge and skills; which will further strengthen their capacity to contribute to development initiatives. There is however scepticism surrounding the notion of indigenous knowledge systems in some authors of disaster literature (Alvard, 1993). Some disaster management professionals have always been suspicious about claims of native wisdom in the management of disasters. Alvard's (1993) argument is that indigenous peoples may have a profound knowledge of their environment, but it does not follow that they will use this knowledge for a conscious conservation of their resources.

Communities also need to develop community disaster plans, ensure effective communication amongst all members of the community and work with experts in the field of disaster management. Kulig (2000) and Brown (2002) refer to the role of communities in acting as sources of information, where pressures from hazards in their localities in general, may pose potential risk factors. With capacity building being at the centre of the building community resilience, coordination by donors as well as government agencies is fundamental.

Integrated conservation and development approaches would appear to add weight to the holistic approach to flood management and increasing resilience against flood risks. Adaptive management strategies not only pursue the goals of greater ecological stability, but also of more flexible institutions for resource management (Holling, 1978).

Conclusion

This paper attempted to assess some of the existing disaster literature on issues surrounding livelihood and resilience of communities under flood risk in Zimbabwe. The starting point in this debate is a common understanding of the concepts of livelihood, vulnerability and resilience, as well as an understanding of the gaps between current resilience approaches. The views of several authors con-

sulted are that the relationship between the dimensions of livelihood and resilience is interactive and mutually reinforcing. In their argument, the forces of nature cannot be stopped, but can be better understood and their effects mapped, while humans learn to live with these forces. Central to the rural livelihoods resilience building debate are livelihood assets. While flood risks are not the only threat to natural resources and livelihoods, the changes they induce in resource flows will affect the viability of livelihoods unless effective measures are taken to protect them through adaptation and other strategies. For vulnerable rural communities, these strategies should include natural resources management using knowledge systems readily available to the communities.

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