The integration of an effective disaster risk reduction system in Namibia based on vulnerabilities of stakeholders in the Zambezi region

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Abstract

Namibia has structures in place for disaster risk reduction. However, the need to mainstream the disaster risk reduction policy at all levels has been emphasised in the literature. The aim of this article is to present opportunities for the integration of effective disaster risk reduction in Namibia based on vulnerabilities of stakeholders in the Zambezi region. The data was collected by quantitative and visual research methods. The quantitative data was evaluated by means of the statistical package for social sciences and the visual data by semiotic analysis. In the opinion of members of civil society, the community and local government agencies, flooding is on the increase and losses in assets have been experienced. The Namibian disaster reduction system consequently faces a challenge. This study recommends an approach that is holistic, society that can act together in reducing disaster risks and facilitate community coalitions.

Introduction and problem statement

Namibia is one of the countries in Southern Africa that has in the recent past been hit by a barrage of climate-related natural disasters such as floods (Tavlas, 2009; UNISDR, 2007). According to the Namibia Rapid Assessment Report, flood disasters affect the Omusati, Oshana, Oshikoto, Ohangwena, Kunene, Kavango and Zambezi (former Caprivi) regions of Namibia (Government of the Republic of Namibia, 2012). The 2009 floods which also affected Angola, Botswana, Mozambique and Zambia are considered to have been the worst in the history of Namibia as it displaced about 276000 people (Newsham & Thomas, 2009: 6). The Namibian Meteorological Services predict more rainfall for a period of time lasting until the end of April (Namibia Flash Appeal, 2011). These downpours result in floods which destroy homes, crop fields, grazing land and occasionally drown livestock and people (Government of the Republic of Namibia, 2004).

These consequences call for effective disaster risk reduction, which in specific terms, refers to the reduction of catastrophic risks through systematic efforts to analyse and manage the causal factors of disasters, thereby reducing exposure to hazards, lessening the vulnerability of people and property, managing the land and the environment wisely, and improving preparedness for adverse events (United Nations International Strategy for Disaster Reduction [UNISDR], 2007:10). Holloway (2003) argues that disaster risk reduction should be based

on diminishing prevailing vulnerability and destruction of social, economic and environmental assets through ongoing development, rather than limiting it to a major response once a crisis becomes apparent. However, the integration of effective disaster risk reduction through ongoing sustainable development is yet to take hold, as Namibia is reactive when it comes to disaster risk reduction and the community depends on government action to decide when and how to respond to the situation on the ground (Amadhila, Shamhula, Van Rooy & Siyambango, 2013).

This aim of this article is to report on the possibilities of integrating an effective disaster risk reduction system in Namibia. The aim of the study was realised through three objectives: (i) to explore the views of the civil society, community and local government in disaster-prone areas about the threat of floods, (ii) to explore their views about the increases in flood-related losses and (iii) to explore the social, economic and environmental loss of assets in flood-prone areas.

The relevant research question for this study was: What would be an effective disaster risk reduction approach for Namibia? It was thought that stating the research question would guide researchers to specify some recommendations that could contribute to realising Namibia's 2015 vision, which is to create a functional national disaster risk reduction system that minimises community vulnerability to hazards and effectively manages the impact of disasters within the context of sustainable development (Government of the Republic of Namibia, 2011). Secondly, the flood-prone areas in the Zambezi region should be the nucleus of the discussion because it is an area where flood disaster is the norm rather than the exception. The researchers expressed the need to use the views and vulnerabilities of the civil society, communities and local development agencies in this flood-prone region as the basis for recommending an effective disaster reduction approach for Namibia.

The reasons why the Zambezi region is usually hit by a barrage of sudden flood disasters have been explained in the literature, among others by Mendelsohn and Roberts (1997) who explain that the Zambezi region forms part of the lower basin of the Zambezi and Chobe Rivers and receives an annual rainfall of 700 mm per year between December and March. Recently, the Namibia's Rapid Assessment Reports have claimed that the flooding in the Zambezi region is due mainly to the Zambezi and Chobe rivers overflowing and not only heavy rains, as is the case in the Omusati, Oshana, Oshikoto, Ohangwena regions of Namibia (Mhata, Amakutsi & Kaurimuje, 2011).

The purpose of this study was to contribute to measures that may be put in place in Namibia to address the problem, objectives and research question stated above. To achieve this purpose, the rest of the paper follows this sequence:

- The framework for disaster risk reduction is outlined. The section shows the international context which shapes the Namibian national disaster risk reduction system.
- The exposition of the research design, population and sampling, profile and methods used in the study.
- Presentation and interpretation of results. The views and vulnerabilities of the civil society, community and local government in the flood-prone areas of the Zambezi Region are presented.
- Discussion and conclusions.
- The way forward, with suggestions for the integration of an effective disaster risk reduction system in Namibia.

The framework for disaster risk reduction in Namibia

The exponential increase in disaster losses worldwide has shifted the focus to the concept of disaster risk reduction as a key challenge of development (Holloway, 2003; Mercer, 2010; Wamsler, 2006; Hasan, Akhter, Ahmed & Kabir, 2013). The shift in the school of thought is in stark contrast to the view of disasters as unavoidable 'natural events' which need to be managed (Weichelsgartner, 2001; Mercer, 2010). However, from an ecological and socio-economic vulnerability point of view, disasters are social events that could be reduced (Hasan et al., 2013). Thus, disaster risk reduction recognises the wider social, political, environmental and economic environments in which disasters are situated (Lewis, 1999; Wisner, Blaikie, Cannon & Davis, 2004; Tra & Shaw, 2007). It provides an increased opportunity for governments and other development partners to engage with on-going risk reduction as an integral aspect of sustainable development and the promotion of rested livelihoods (Wamsler, 2006; Holloway, 2003; Mercer, 2010).

The Hyogo Framework for Action (HFA) was endorsed by the United Nations (UN) General Assembly in a resolution following the World Disaster Reduction Conference (WCDRR) held in Kobe, Japan from January, 18 – 22, 2005 (Basher, 2006). The resolution suggests five priority areas of action: (a) to ensure that disaster risk reduction is a national and local priority with a strong institutional basis for implementation, (b) to identify, assess and monitor disaster risks and enhance early warning; (c) to use knowledge, innovation and education to build a culture of safety and resilience at all levels, (d) to reduce the underlying risk factors and (e) to strengthen disaster preparedness for effective response at all

levels (UNISDR, 2005). The central objective of the HFA is to strengthen capacity for disaster preparedness through education and effective action (Enia, 2013; Wisner & Walker, 2005). The HFA is now seen as a bottom-up framework being used by government departments, local development partners and communities around the world to provide an opportunity for information and action that trickle down to local communities and individuals in disaster-affected areas (Chan, 2013). The Namibian government has since then joined the rest of the world in conceiving how this framework could be realised. Amadhila, *et al*. (2013) state that the Namibian government has endorsed the HFA framework to develop communities' resilience against disasters and to assist the country to move away from an emergency response approach to one of integrated disaster risk reduction. This objective described in the Namibian context seems to be consistent with the aspiration for integrated disaster risk reduction that fits in the broader paradigm of sustainable development.

The Namibian government has established the following institutions and structures to handle disaster preparedness at all levels: the Directorate of Disaster Risk Management (DDRM), the Emergency Management Unit (EMU), the Regional Emergency Management Unit (REMU) and the Constituency Emergency Management Unit (CEMU) (Government of the Republic of Namibia, 2008). An analysis of the report pertaining thereto shows that these are multi-tiered institutional structures that ensure that disaster risk reduction is a national, regional and constituency priority, that disaster risks are identified, monitored and assessed at national, regional and local level and that early warning is enhanced at all these levels. Training and education are also highlighted as mechanisms to address disaster issues. Furthermore, the report identifies the need for a policy that instructs cooperation from the stakeholders when it comes to disaster issues. The Namibian National Policy for Disaster Risk Management, which was drafted in 2009, therefore aligns itself with international standards for human rights in fulfilling that role (Johnson, 2011).

The aforementioned assertions seem to demonstrate that Namibia has structures, institutional frameworks and instruments (viz. DDRM, REMU and CEMU) in place which can be used to integrate an effective disaster risk reduction plan and strengthen disaster preparedness at national, regional and local level. The need to promote effective disaster risk reduction through the mainstreaming of national policy and to embrace informal settlements, vulnerable people and Non-Governmental Organisations (NGOs) has been emphasised in the literature. Johnson (2011) argues that the national policy for disaster risk reduction in Namibia has overlooked the role and input of informal settlements and people themselves. In addition, Gold, Namupolo and Müller (2010) observe that the

document on policy about climate change and disaster does not include any reference to any type of community-based organisation. This paper attempts to redress this deficit by exploring an enhanced approach that could assist the integration of an effective disaster risk reduction system in Namibia.

Research design

This study was based on a combination of quantitative and visual research designs using a literature review (Evans & King, 2006; Mitchel, 2011). The quantitative research design uses a questionnaire consisting of some items borrowed from the Views from the Front Line (VFL). According to the Global Network for Disaster Risk Reduction cited in Amadhila *et al*. (2013:3), the VFL is a participatory multi-stakeholder engagement that was designed to monitor, review and report on critical aspects of local governance and is seen as the most important factor in building community resilience (Amadhila, *et al*., 2013, p. 3).

Quantitative research design assesses the views of the civil society, community and local government in the flood-prone areas of the Zambezi Region of north-eastern Namibia. The visual research design uses two sets of photographs (Marvasti, 2004; Mitchel, 2011): One set demonstrates the losses of social, economic and environmental assets. The other set, opposed to the first, demonstrates the cultural context of civil society, the community and local government in the flood-prone areas.

Specific aspects of the research design, such as population and sampling, geographical location and socio-economic background of the study area, gender of the respondents, the survey and visual research process and data analysis are now discussed.

Population and sampling

The population of the study were residents of the flood -prone areas of the Zambezi region in north-eastern Namibia and included Kabbe, Katima Mulilo, Libula, Lusese and Lisikili. The stratified sampling method was applied because participants who represent different interest groups in civil society, community and local government were selected. One hundred and eighty one (181) respondents participated in the study. They were selected from the community, local government and civil society organisations. These represent different stakeholders who in their capacity are affected and respond to flooding in the Zambezi Region.

Geographical location and the socio-economic background of the study areas

The Zambezi region is situated in the far north-eastern corner of Namibia. Katima Mulilo is a statutory boundary that defines an urban area under the jurisdiction of the Katima Mulilo Town Council (Government of the Republic of Namibia, 2004). However, parts of Katima Mulilo are situated closer to the flood plains of the Zambezi River. The main economic activities in Katima Mulilo are related to the fish industry; tourism; education; health, transport and infrastructure development, and local trade.

Kabbe, Libula, Lusese and Lisikili and Libula are rural areas. The residents prefer to reside closer to the floodplains of the Zambezi River. Economic activities in these areas include the fish processing, livestock, agriculture and horticulture, limited off-farm activities such as a form of trading, as well as wildlife and tourism (Purvis, 2002). Social activities include collecting water for domestic use and taking livestock to water points (Mendelsohn, et al.,1997). Thus the main source of livelihood for the people in these areas is derived from interaction with the bio-physical environment.

The survey, visual research process and data analysis

The following research question was posed: What would be an effective disaster risk reduction approach for Namibia? In order to reach an answer, a survey that consists of the items borrowed from the VFL was initiated to collect data from the civil society, community and local development partners in the Kabbe, Mulilo, Libula, Lusese and Lisikili areas of the Zambezi region using a questionnaire and visual research methods. The questionnaire explored the views of the participants about (i) the threat of natural disaster such as floods, and (ii) increasing losses due to flood disasters. Finally, visual research methods such as photographs that exhibit the social, economic and environmental losses due to flood disasters were utilised.

The collected quantitative data from the questionnaire was captured by the University of Namibia's (UNAM) Multi-Disciplinary Research Centre (MRC). The data was analysed by means of the Statistical Package for Social Sciences (SPSS) which calculated the frequencies and percentages to indicate the degree to which respondents agreed with items of the VFL based questionnaire.

The visual data was analysed using the content analysis and semiotic analysis (Silverman, 2001; Neuendorf, 2002; Marvatsi, 2004). The content analysis when applied to photographs helps to interpret the message revealed by its content

(Lune, Pumar & Koppel, 2010) and is a process of choosing and interpreting photographs showing how people in a particular place have been affected by flooding. According to Marvasti (2004), content analysis ignores the cultural context because it focuses on the image itself and not the site of its production and audience. An orientation suited to dealing with these cultural contexts is semiotics (Marvasti, 2004). In that regard, the following toolkit concepts were used to analyse visual images used in this report:

- Binary opposition refer to photographs presented in pairs but opposed to one another. Photographs that were taken demonstrate the vulnerability of flood victims in north-eastern Namibia. However, opposing photographs that exhibit the normal cultural context of flood victims were also presented
- Signifiers/signified refer to signs and their referents. This was used to reflect two-dimensional aspects of photographs as an index of flood disaster and as signifiers of affected livelihoods and disrupted market opportunities.
- Narrative analysis refers to the presentation of a storyline that explains the flood disaster, demonstrating the cultural context of the people in the affected areas (Emisson & Smith, 2000; Neuenderorf, 2002; Marvasti, 2004).

Presentation of the results and interpretations

The collected data presents (i) views of the civil society, community and local government in disaster-prone areas about the threat of flood disaster, (ii) their views about increases in the flood losses and (iii) visual data reflecting the social, economic and environmental losses due to flood disaster in the study areas. Visual data which opposes the losses are also shown demonstrating the cultural context of the flood-prone area.

The views of the civil society, community and local government about the threat of flooding in disaster-prone areas of the Zambezi region

The views of the civil society, community and local government about whether there was an increase in the threat of flooding in the Zambezi region were explored The majority of respondents regard themselves as being at high (44.2%) or very high (22.1%) risk of flood disasters. Fourteen point four per cent (14. 4 %) of respondents perceive that flood disaster increases are not high but are rather average. Some respondents however perceive the threat to be minimal (3.3%) and low (16%) respectively. These are respondents who live in disaster-prone areas and might not have experienced direct flood consequences because of their locations. In general it was shown that the threat of a natural flood dis-

aster is on the rise and that an effective disaster reduction approach needs to be envisaged.

The views of the civil society, community and local government about increases in flood losses according to age groups of participants in the Zambezi region

The views of the civil society, community and local government about increases in flood losses according to age categories were explored and the results are shown in Table 1.

Table 1: The views of the civil society, community and local government about flood losses in the Zambezi region according to age

Age	No Change	Slight Decrease	Slight Increase	Substantial Decrease	Substantial Increase	Total
18-24	(2) 12.5%	(1) 3%	(2) 3%	(0) 0%	(1) 1.9%	**(6) 3.3%**
25-60	(9) 56,2%	(26) 81%	(57) 78%	(6) 87%	(34) 64%	**(132) 73%**
61+	(5) 31.2%	(5) 16 %	(14) 19%	1 13%	(18) 34%	**(43) 24%**
Total	**(16) 100%**	**(32) 100%**	**(73) 100%**	**(7) 100%**	**(53) 100%**	**(181) 100%**

Table1 shows that the majority of respondents who experienced flood losses are in the productive age group of 25-60 years. This is due to the fact that this group of the population depends on the floodplains resources for fishing, crop production and water for human consumption and livestock use. This is followed by the group older than 60 years. They engage in social and economic activities but to a limited extent. The results imply that the productive group of the population are the mostly severely affected when a flood disaster occurs.

The views of the civil society, community and local government about increases in flood losses according to gender profiles of participants

The views of the civil society, community and local government about increases in flood losses according to gender were explored and the results are shown in Table 2.

Table 2: The views of the civil society, community and local government about increases in flood losses according to gender

Gender	No Change	Slight Decrease	Slight Increase	Substantial Decrease	Substantial Increase	Total
Female	(11) 69%	(17) 53%	(41) 56%	(2) 29%	(25) 47%	**(96) 53%**
Male	(5) 31%	(15) 47%	(32) 44%	(5) 71%	(28) 53%	**(85) 47%**
Total	(16) 100%	(32) 100%	(73) 100%	(7) 100%	(53) 100%	**(181) 100 %**

Table 2 shows that males experienced a high percentage of flood disaster losses. This is significant because male activities are more related to fishing and livestock production. However, the percentage of women who might have experienced flood losses is also significant. The result indicates that both men and women are affected, albeit in different ways, by flood disasters. It suggests that efforts to address the disaster must focus on men and women equally.

The social, economic and environmental assets lost due to flooding in the Zambezi region

The visual data in Figures 1 and 2 presented in opposing pairs demonstrates the impact of floods in the urban area (Katima Mulilo) and demonstrates the normal cultural context of the urban areas.

Figure 1: Flooded parking spaces, offices and roads in flood-prone areas of the Zambezi region. **Photo:** University of Namibia's Climate Change Disaster Management Programme (24 March 2011)

Figure 2: Parking space, offices and roads in the Zambezi Region not affected by flooding.
Photo: (P. Kachelo , 9 October 2013)

The scenario in Figure 1 displays affected social, economic and environmental activities in Katima Mulilo of the Zambezi region. These are transport; tourism and health, education and infrastructure development. The flood situation also affects productivity because it restricts access to the various workplaces. The photograph in Figure 1 implies that urban areas are vulnerable to flood disaster and that efforts are needed to maintain social conditions in Katima Mulilo at the level shown in Figure 2.

The visual data in Figure 3 and 4 were taken and presented in opposing pairs to demonstrate the impact of floods in the rural areas and to demonstrate the village cultural context.

Figure 3: Flooded mud-walled house and reed fenced enclosures in flood-prone areas of the Zambezi region. **Photo**: University of Namibia's Climate Change and Disaster Management Programme (24 March 2011)

Figure 4: Mud-walled house and reed fenced enclosures in the Zambezi region not affected by flooding.
Photo: (P. Kachelo, 10 October 2013)

Figure 3 pertains to flood water that invaded the mud-walled houses with thatched roofs, the reed fenced enclosures and children's playground in the

Kabbe, Libula, Lusesse and Liskili areas of the Zambezi region. The mud-walled houses are places of sleep, storage of household income and equipment. The reed fences surround the mud-walled houses and serves as a place where food is prepared, and the family gather to have meals and discussions. It is on occasion also used for economic activities. The open space is normally reserved for children's play and discussions that involve the entire village. Figure 3 therefore indicates that environmental, social and economic activities might be affected by flooding. The economic activities pertain to limited trading which takes place within the reed enclosure; the social activities pertain to food preparation and loss of assets for community meetings. Environmental assets pertain to a loss of interaction with the land. These results indicate the affected social, economic and environmental assets and confirm that efforts are required to restore the lives of the people to the scenario depicted in Figure 4.

The visual data in Figure 5 and 6 were taken and presented in opposing pairs and demonstrate the impact of floods on livestock and the context of cattle grazing in the study areas

Figure 5 Cattle grazing in the flooded land, **Photo**: University of Namibia's Climate Change and Disaster Management Programme (24 March 2011)

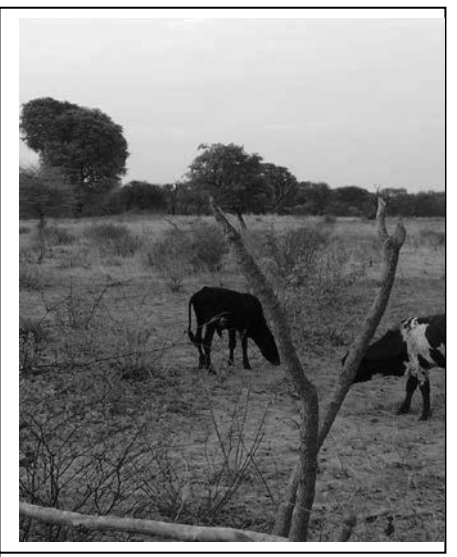

Figure 6: Cattle grazing on land not flooded
Photo: (P. Kachelo , 14 October 2013)

Figure 5 pertains to cattle grazing in the flooded land of the Kabbe, Libula, Lusesse and Liskili areas of the Zambezi region. This scenario makes it clear that livestock production, one of the main social and economic activities of the people in the study areas, is affected when grazing land is flooded. Consequently, the social activities pertaining to cattle rearing and economic benefits that spring from livestock production are affected. In general these results indicate affected social, economic and environmental assets and that effort are needed to restore the situation to the scenario depicted in figure 6.

Discussions and conclusions

The participants in this study were selected because they bear the brunt of flood disasters in the Zambezi region and hence their views are crucial in justifying possibilities for the integration of an effective disaster risk reduction approach for Namibia. The high participation rate in the survey can be observed in the data depicted in Tables 1 and 2. Their participation seems to suggest that the civil society, community and local government are eager to share views which have the potential to create a participatory multi-stakeholder engagement designed to monitor, review and report on critical aspects of local governance. These views can be used to present opportunities for the integration of an effective disaster risk reduction approaches for Namibia.

Shongwe, Van der Hurk, De Boer, Coleho and Aalst (2008) emphasise that natural disasters are on the rise in Southern Africa. Based on the data presented in Table 1 and 2, it can be concluded that the increase on natural disaster also holds especially true in the Zambezi region of north-eastern Namibia. Interestingly, there were no significant gender-related differences among the respondents (see Table 2). However, studies by Ahooja-Patel (1992) shows that women are generally assumed to be the most vulnerable to the impacts of natural disasters. Based on Tables 1 and 2, it can be concluded that the productive group of society, including women, is exceptionally vulnerable to flood disasters in the Zambezi region.

The observations in Figures 1, 3 and 5 shows that flood disasters affect the social, economic and environmental assets of both urban and rural areas of the Zambezi region. The loss of assets comes in different forms. Social assets in urban areas pertain to offices, parking facilities and roads while in rural areas they pertain to reed fence enclosures and houses which are used for cooking and sleeping. It also affects grazing land. Economic activities include loss of productivity, transportation services and the curtailing of off-farm activities in the affected neighbourhoods. The environmental asset loss pertains to the inhibiting

of people's ability to interact with the natural environment. This result aligns with the proposition of Weichlselgartner (2001) who argues that social, economic and environmental loss comes through loss of houses, transport infrastructure the interaction of society with biophysical conditions. This result demonstrates that vulnerability results in losses which minimise people's ability to draw upon internal resources and competencies.

The literature shows that Namibia has structures such as the DDRM, REMU and CEMU which could be used to implement an effective disaster reduction approach. However, the results of the study suggest the existence of a challenge to Namibian disaster reduction efforts. This is observed in the visual data reflecting flooding in urban and rural areas and also in the views of the participants in the study. It seems that the communities and local government respond to flooding reactively and not proactively. This could be averred because if there had been some anticipation of the flooding disaster in Kabbe, Libula, Katima Mulilo, Lisikili and Lusese areas of the Zambezi region, the loss of environmental, social and economic assets as shown in Figures 1, 3 and 5, would not have occurred. Therefore, this scenario calls for an approach in Namibia which would address people's anticipation of disasters.

The way forward

The Namibian community should be assisted and empowered to address disasters effectively and pro-actively, as a lack of anticipation is evident. One way of achieving this is by promoting disaster awareness designed to help all people understand and respond to different disasters (Cardona, 2006; Shaw 2006). Communication on all disasters would help to ensure that the communities, civil society and local government are prepared for all disasters that may possibly occur in a given area. The main target of the holistic approach should be the productive group of the population.

The researchers recommend that the Namibian DDRM instruct the REMUs and CEMUs to embrace a holistic approach to disaster risk reduction in different regions and constituencies of Namibia (Perry, 2007) because it would help to ensure that people are prepared for all disasters (floods, drought, locusts invasions and others) in terms of characteristics (type of hazard, geographical areas at risk, frequency, magnitude, probability of recurrence) and in terms of exposure characteristics (geology, elevation, number of people at risk) (Thomalla, Downing, Spanger-Sigeried, Han & Rockström, 2006). Green (2004) supports this view and argues that flood may be a negligible hazard when compared to other hazards. In the authors' opinion, the holistic approach would help to ensure that the communities, civil society and local government are not only prepared for all

types of disasters but could also learn how the social, economic and environmental assets could be protected in light of the disasters that are possible in a given area. The holistic approach should take note of the following characteristics, as borrowed from Weichselgartner, (2001):

a) Mitigating of natural disasters must stress social rather than physical approaches.

b) These approaches must place emphasis on pro-active rather that reactive responses.

c) Reduction of vulnerability to disaster must be integrated as part of the on-going policies and programmes.

d) These policies and programmes must constantly be reviewed, evaluated and modified.

The following needs to be emphasised in terms of developing the above characteristics in Namibian disaster reduction systems. The social approach should transfer knowledge and skills, attitudes and values as well as actions about all types of disasters. The physical approach should, in the researchers' opinion, be aimed at providing temporary solutions such as relocations, food relief and health support to vulnerable people after the disaster has occurred. This is reactive and should be used as a complementary measure because it only addresses short-term effects. The emphasis on the pro-active approach is consistent with approaches that ensure that all disasters are planned for well ahead, anticipated and forecast (Olowu, 2010). The on-going policies and constant review of policies would help the disaster reduction processes to correspond to the realities of the flood-prone areas in Namibia. Furthermore, the researchers' opinion is that these characteristics build disaster risk resilience to the point where communities cope with all disasters, [are] trained how to bounce back and how to adapt in order to cope with future risks (Manyena, 2006).

Social capital instruments (Nakagawa & Shaw, 2004; Mayunga, 2007) must be developed among the productive group of the population as they seem to be greatly affected by the loss of social, economic and environmental assets, as portrayed explicitly and implicitly in Figures 1, 3 and 5. There is a need to capitalise on the enthusiasm of the community, civil society and local government, which is evident in their eagerness to participate in sharing views about flooding, such that these are used to inculcate social capital that brings communities on the ground to work together to address disaster. In researchers' opinion, social capital helps productive people to move away from an emergency response approach to one of integrated disaster risk reduction. Social capital is a process of promoting networks, norms, and social trust that facilitate the cooperation and mutual trust of the community, neighbourhood organisations and volunteer

agencies and help them to feature prominently in efforts aimed at increasing disaster preparedness and disaster mitigation (Gopalakrishnan & Okada, 2007). Furthermore, Mayunga (2007) argues that social capital is important to allow the building of a society that will act together in terms of land allocation, land distribution and resource allocation. It inculcates a sense of community and belonging to people and places (Paton & Johnston, 2001). The social capital approach provides the following advantages:

> (1) Getting bigger helps to ensure that the entire community (affected and non-affected) is capable of drawing upon internal resources and competencies to address demands and challenges encountered.
> (2) Increased diversification helps to ensure that communities (affected and non-affected) create a diverse portfolio of activities and social support capabilities in order to survive and to improve their standard of living.
> (3) Reducing concentration helps communities (affected and non-affected) to understand emergency conditions after disaster has stabilised, how and when to safely move into stricken regions and to restore and reconstruct the built environment (Green 2004; Ellis, 2007; Paton & Johnson, 2001).

The above advantages of social capital must be integrated with Namibia's national policy and also with the action plans for disaster risk reduction. One way of developing these characteristics is to design communication approaches that mobilise the mutual affection and spirit to help disaster-affected and non-affected people in overcoming the consequences thereof (Shaw, 2006). Therefore, the DDRM, through the REMU and the CEMU, should be urged to coach Namibian citizens to act as a community or unitary society during disasters as this process would help communities to own a disaster. In the researchers' opinion, owning a disaster means communities are urged to act together in identifying evacuation sites for distributing social and economic resources. It also means that the community will put mechanisms in place to ensure that land that was evacuated will not be occupied illegally as the reconstruction process will be a joint effort.

Flooding (and other disasters) in urban and rural areas must be managed by the use of inter-regional and inter-spatial master planning because these geographic areas are interlinked through commodities, the flow of information and a demand for basic goods and services (Tacoli, 2003.) However, environmental links need to be considered. Firstly, the simultaneous occurrence of flooding in rural as well as urban areas shows the need for inter-regional and inter-spatial master planning. Secondly, the review of Namibia's disaster reduction strategies has

shown no evidence of inter-regional and inter-spatial master planning because most towns and other localities seem to address disasters in isolation, designed solely for the purpose of addressing flooding in their particular locality (Johnson, 2011). A case in point is the disaster reduction effort in Northern Namibia where a channel that was proposed to manage the flood waters in Ondangwa simply drains into a village south of the town, exacerbating the flooding there (Gold, *et al*.,2010). Nevertheless, there is evidence of establishing links in the disaster-prone areas through the construction of bridges and additional water systems that would enable water flow and drainage systems to help children reach their schools during the rainy season (Amadhila, 2013, p.2). However, these are not inter-regional and inter-spatial in that they seem to overlook how disaster reduction processes in one administrative unit worsens disaster in another administrative unit.

The REMU of each Namibia region must therefore be urged to develop master plans which can be used as a framework for coordinating the disaster risk reduction strategies for rural and urban areas situated in different administrative units. The master plan should not only be used to address the social and economic connections but also the environmental connections as described above. This is also in line with the hypothesis of Meit, Briggs and Kennedy (2008) who argue that communities should develop coalitions to facilitate planning and communication among urban and rural areas or administrative units. Inter-regional and inter-spatial master planning that harmonises the aspirations of different disaster agencies would ensure that the disaster reduction effort in one geographical unit does not exacerbate the effects of a disaster in the other geographical units.

Conclusion

This article addressed the possibilities of integrating an effective disaster risk reduction system in Namibia. It draws empirical data from lessons learnt in the Kabbe, Katima Mulilo, Liskili Libula and Lusese areas of the Zambezi region in the north-eastern Namibia. The article shows that Namibia possesses the structures and institutional framework for the integration of an effective disaster risk reduction system. However, the threat of disaster due to flooding has increased. In addition, the literature shows that national policy for Disaster Risk Reduction in Namibia has overlooked the role and input of informal settlements and people themselves and does not include any reference to any type of community-based organisations. This suggests that the Namibian disaster reduction efforts face a challenge.

In light of the above, the following research question was asked: What would be an effective disaster risk reduction approach for Namibia? In the researchers' opinion, an effective disaster risk reduction strategy for Namibia would be one designed to promote three approaches:

- The DDRM, REMU and the CEMU must embrace communication appearances that help to understand all types of disasters. This would help the communities, civil society and local government to become more effective by being prepared to address all types of the disasters.
- The DDRM, REMU and the CEMU must use social capital instruments to build networks, communities and societies that would help ensure that the loss of social, environmental and economic assets due to disasters is reduced. This would enhance the expansion of communities, civil society and local government that can act together because it would ensure that the enthusiasm of community-based organisations, vulnerable people and non-affected is developed to take centre-stage in addressing all disasters.
- The REMU is urged to develop a master plan that would ensure that disaster reduction efforts in one part does not worsen or cause similar effects in others.

The above recommendations should be integrated with the Namibian national policy for disaster management and into an action plan for disaster risk reduction. Integration will help to build resilience and preparedness and more importantly, help Namibians to participate in the creation of a functional national and local disaster risk reduction system that minimises community vulnerability to hazards.

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