

Examining the Nature of Disaster Risk Reduction Strategies in Local Municipalities: A Case Study of Ndwedwe Local Municipality

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Abstract: Local government is at the coalface of service delivery, one of their duties is to ensure the safety of its communities from risks that can occur at any time in their daily lives. Communities can be exposed to disaster risks that usually occur when they are least expected. Hence local municipalities should always be forearmed with effective disaster risk reduction strategies. This paper examines the nature of disaster risk reduction strategies in rural municipalities using a case study of Ndwedwe Local Municipality. This paper further discusses the South African Disaster Risk Assessment Model in relevance to the case study. The article then further looks at the status quo of the municipality in terms of its readiness to different forms of disaster that it periodically faces. This paper employed a qualitative research design through semi structured interviews and focus groups. The findings of this paper show that rural municipalities are vulnerable to the disaster risks because of the lack of resources, both financial and human. They also show that the municipality needs to use a 'bottom-up' approach by involving the communities in the identification of risks as well as the implementation of the municipal proposed strategies. Findings also show that rural municipalities need to undertake disaster risk assessments to allocate the resources accordingly. Most of all, the implementation of the strategies needs to have its own budget allocation, hence political buy-in and senior management willingness are also pivotal.

Keywords: Disaster, Disaster risk management assessment, disaster risk reduction model, Disaster risk reduction strategies, Participation, Vulnerability analysis

1. Introduction

The ever-increasing scale of human plight periodically becomes evident when disaster, in any manner or fashion, rears its ugly head in communities that are especially based in rural municipal areas (Carrivick & Tweed, 2016). Disasters in different forms; which could be thunderstorms, lightning, hailstorms, drought, veld-fires, fires, any other form always strike communities when least expected. When such happens, communities become faced with the deterioration in their livelihoods, socio-economic conditions, environment food security in times of droughts (Lindell & Prater, 2003). On the other hand, communities, worldwide, are being negatively impacted by climate change, which further exacerbates these conditions. It is from this particular premise that municipalities should always be forearmed with community-based disaster risk reduction strategies (Carrivick *et al.*, 2016). This article is primarily intended to explore the nature of disaster risk reduction strategies within the rural Ndwedwe Local Municipality, which forms part of the family of iLembe District Municipality.

iLembe District Municipality comprises of four local municipalities, namely KwaDukuza, Ndwedwe, Maphumulo, Mandeni local municipalities. The proceeding section provides an overview on disaster management in South Africa.

2. South African Overview on Disaster Management

South Africa is one of the developing economies that are often tightly affected by distractors events (Adelekon, Johnson, Manda, Matyas, Mberu, Parnel, Pelling, Stterthweite & Vivekananda, 2015). In South Africa, accountability is a standard of public life, where holders of public office are accountable for their decisions and actions to the public and must submit themselves to whatever scrutiny is appropriate to their offices (Oosthuizen, 2018). Armstrong (2005) refers to the obligation on the part of public officials to report on the usage of public resources and answerability for failing to meet stated performance objectives (Gildenhuys & Knipe, 2000). South African government officials in all spheres are accountable to citizens if there are

backlogs and poor service delivery. The Constitution of the Republic of South Africa, 1996 (chapter 7:152), requires local government to provide democratic accountable government to local communities; ensure the provision of services to communities in a sustainable manner; promote social economic development; promote a safe healthy environment; encourage community organisations in matters of local government matters (Aitsi-Selmi, Egawa, Sasaki, Wannous & Murray, 2015). Government accountability to all citizens translates to improving the lives of the poor and the vulnerable (Kruger & Sandhann, 2018).

3. The Impact of Disaster in South Africa

The impact of natural or man-made disasters is extensive and practically immeasurable. Natural disasters result in deaths, displacement of people, destruction of houses and other infrastructure, isolation of vast areas of the country due to destruction of vital social economic infrastructure, including bridges, roads, power stations, water supply systems, hospitals and schools (Botha, Van Niekerk, Wentink, Coetzee, Forbes, Maartens, Annandale, Tshona & Raju, 2011). Disasters contribute to the retardation of development in the affected regions (Dunne & Mhone, 2003). According to Dunne and Mhone (2003), the impact of disasters at the household level, disrupts normal livelihoods, displaces families, destroys infrastructure and disentangles social and community networks. Syed (2008) asserts that disasters can seriously disrupt development initiatives in several ways, including loss of resources, interruption of programmes, impact on the investment climate, impact on the non-formal sector and political destabilization. This suggests that the budget for development initiatives such as housing construction can be deviated or channelled to respond to other areas affected by disasters. Furthermore, disaster impacts can cause social activism resulting in political disruption, especially during interminable period of disaster recovery (Gosling, 2018).

4. Effect of Disasters on the Economy

Khanyile and Marce (2017) distinguish the economic effects of disasters as direct, indirect and secondary. They define direct effects as the economic damage to property and the loss of income. Direct effects may be in the form of the destruction of sites of

production such as factories or farms (Pharoah, Fortune, Chasi & Holloway, 2015). The example of direct effects are loss of capital (housing and farm), loss of stocks, costs of emergency relief and repairs, and production loss (poor harvests, destruction of crops, death of livestock). Indirect economic effects may be caused by direct losses, which result from the decline in production and the provision of services, for example, a reduction in the activity of suppliers (Pharoah, Holloway, Fortne, Chapman, Schaber & Zweig, 2016). Furthermore, both direct and indirect effects may result in secondary effects which appear sometime after the disaster. Huigen and Jens (2002) state that secondary effects include an increase in disparity between individual and family income, ecological changes or negative changes in the balance of payments (Clay, 2004)

According to Rasmussen (2004) the aforementioned impacts may cause spill-overs at the macro-economic level, as fiscal and external pressures can lead to imbalances that spark economic crises, and an increase in the incidence of poverty can create social unrest. Imperiale and Vanclay (2016) stress that the secondary effects of a disaster include inflation, balance of payment problems, increases in fiscal expenditure and decrease in monetary reserves. Natural disasters are detrimental to the economic development of developing countries as they may be accompanied by a reduction in the Gross Domestic Product (GDP), increase in imports, and deterioration in fiscal balances. Croward (2006) found that 21 major natural disasters in Southern African countries led to an average worsening of the trade balance owing to an increase in import growth, to a lesser extent, a reduction in export growth. Due to flooding in 2000, Mozambique lost over 10% of its total productive fields, as well as the crops in the field, about 40 000 head of cattle were washed away (Croward, 2006). Sudden fast onset disasters such as floods have been particularly costly, both in terms of loss of human life and financially. It is estimated that the 2008 KwaZulu-Natal storm surges, which was declared a disaster, cost the South African government millions of Rands in relief aid, considerably more in terms of road and other infrastructural repairs, apart from the huge social costs of the disaster (Syed, 2008). According to Syed (2008), disasters especially when they have occurred repeatedly within a short period of time, have a negative impact on the incentive for further investment. Investors need a climate of stability certainty to be encouraged to risk their money.

5. Impact on Infrastructure

In India most of the communication infrastructure was destroyed and a good portion of the transportation infrastructure was damaged (Salami, Von Meding & Giggins, 2017). Local government had no immediate means to alert the central government of their imminent needs. This resulted in the lack of initial assessment, urban search rescue teams were not sent in time to be fully effective in their missions (Vanclay 2019). The bulk of the initial rescue missions were carried out by neighbours helping neighbours, digging with their personal tools (Haddow *et al.*, 2006). The earthquake caused damage in 7904 villages in 21 of the state's 25 districts. The district of Kuchchh where the epicentre was located sustained the bulk of the damage, with more than 400 villages affected. In five major towns, buildings were virtually 100% damaged, 257 000 of the houses were damaged or destroyed. However, in the city of Ahmedabad, 179 buildings were destroyed (Haddow *et al.*, 2006)

6. Disaster Risk Reduction Strategies in Ndwedwe Local Municipality

This section mentions current disaster Risk Reduction Strategies in Ndwedwe Local Municipality. Most of these strategies are incorporated from the district level which is ILembe District Municipality

6.1 Current Disaster Risk Reduction Strategies

- The establishment of the Local Disaster Management Centres which clearly emanates from the fact that it is the local municipalities that are at the coal-face of the local service delivery and the idea is aimed at mitigating the disaster issues that periodically haunt the local communities. It also goes without saying that the turn-around time will be improved in terms of the responses that are needed from the municipality, should disaster in any form strike.
- The strengthening of the Disaster Management Offices in terms of the resources, both financial and human, within the local municipalities has also been seen as one of the strategies that should be given priorities as this will assist in the coordination of disaster management activities across the municipality. It was even evident in the interviews and the focus group discussions that there is general unhappiness about the shortage of personnel in the Ndwedwe Municipality

Disaster Management office. Thus, the issues of resources, both human financial, are a real bone of contention in the rural municipalities.

- The Municipality also formed a political structure that deals with the issues of disaster management which comprises of Councillors, Municipal Manager, Directors, relevant Line Manager the Representatives from the Traditional Leadership this structure is chaired by one Councillor from the Executive Committee.
- Spatial Development Planning is one of the strategies that municipalities should embark on as one the risk reduction strategies. This will be further looked at in the analysis below.
- Stakeholder involvement which comprises of the Sector Departments, Council Structures and all the other role players that deal with disaster issues has also been seen as one of the strategies. This will assist in the planning, monitoring and the evaluation of the strategies in order to constantly improve on the implementation.
- The training and development of all the stakeholders in terms of the most recent and most feasible disaster risk reduction initiatives.
- The conducting of a comprehensive risk assessment across all the 19 Ndwedwe Municipality Wards. This assists all the stakeholders in terms of the levels of vulnerability of the wards for prioritising on the preparedness aspect.
- Research and Development (R&D) has also been accentuated as an ongoing strategy in the Municipality so that its awareness campaigns are credible and scientific (Satterthwaite, 2017).

The above-mentioned measures or strategies are mostly relevant to Ndwedwe Local Municipality. Ndwedwe Local Municipality is one of the rural municipalities in KwaZulu-Natal. KwaZulu-Natal as a Province has a number of rural municipalities and they are vulnerable to disastrous events that occur in their area. The proceeding sections discuss the South African disaster risk assessment model.

7. Disaster Risk Reduction Model

There is a number of disaster risk reduction models, this may include models such as the Community-Wide

Vulnerability and Capacity Assessment (CVCA) model and Community-Based Risk Reduction Model. However, for the purpose of this paper the South African Disaster Risk Assessment model will be explained in relevance to the case study.

7.1 South African Disaster Risk Assessment Model

As set out in the National Disaster Management Framework (Republic of South Africa, 2015), this model provides a generic guideline for undertaking disaster risk assessment within South Africa. Emanating from a progressive piece of legislation (that is, the Disaster Management Act 57 of 2002), the core principles of this model accentuate the current disaster risk reduction concerns and practice.

7.2 Underpinning Fundamentals of the Model

Fundamentally disaster risk assessment is expected to inform effective disaster planning and risk reduction strategies (Van Niekerk, 2014). The primary principles of the model may be regarded as strategic enablers towards this end. First and foremost, disaster risk assessment should be conducted in a systematic and sequential manner. This approach allows for the outcomes of the various stages to be in consonance with and directly inform the requirements of the disaster risk planning process (Republic of South Africa, 2005). Secondly, disaster risk assessment is to be successively integrated into the development plans of national, provincial and local government so as to ensure that it is considered as part of the strategic planning and resource allocation process (Aucamp, 2015). For example, the inclusion of disaster risk assessment requirements and outcomes in the Integrated Development Plans is a means of securing political support and resources for implementation purposes. Thirdly, as a means of increasing the capacity of communities towards minimising the risk and impact of disasters (Republic of South Africa, 2005), community based disaster risk assessment is essential.

8. Methodological Approaches

This paper followed qualitative research procedures. Saunders, Lewis and Thornhill (2003) clarify that qualitative studies are subjective. It is an examining method as it focuses on significations of a particular subject. It also identifies and describes implications articulated using words. There is no

centralised procedure in analysing and interpreting a qualitative data, there is a variety of data analysis and interpretations, this depends on the type of the study (Neuman, 2000). In order to obtain an in-depth knowledge on a particular subject, using a case study approach is quite appropriate (Marshall & Rossman, 1989). This is the logic why this article used a case study. A case study approach is mostly used when the study asserts a wide-ranged subject matter, therefore a case study approaches the most relevant and researchable example on that particular field. A case study approach is also commonly useful on understudied concepts (Yin, 2009). The case study used in this paper is Ndwedwe Local Municipality. The reason behind the selection of this organisation as a case study is that the researchers recognised the necessity to improve the issue of disaster management in this rural municipality as this is the researcher's workplace. Furthermore, Ndwedwe Municipality is one of the most rural municipalities in ILembe District Municipality thus vulnerability caused by disaster in communities is tremendous. Moreover, this is a researcher's workplace. Data was collected through semi-structured interviews and focus groups. This article is extracted from a master's degree research project. Any research study is required to make ethical considerations, thus the researchers followed this procedure and took certain issues into consideration in this article.

9. Results and Discussion

The results and discussion are presented hereunder as per study findings.

9.1 Nature of the Current Disaster Risk Reduction Strategies

The cornerstone of this research is the above-mentioned theme and the whole research has revolved around the issue of the effectiveness of these current disaster risk reduction strategies. And in the preceding paragraphs some of these strategies have been alluded to and most of all emanated from the responses that were given by the participants.

The Mayor (19 October 2016) gives an overview as to how prepared he thinks the rural municipalities should be in terms of the strategies to disaster risk reduction. He basically looks at preparedness in terms of the functional Disaster Management Unit within the municipality, risk identification across

all the wards and preventative or mitigating factors towards disaster risk reduction. The Mayor (19 October 2016) put it as follows:

"My understanding of such initiatives as a new political principal in the local municipality is a bit limited, however, with the experience that I had as a previous Chief Whip of the ruling party in the District Municipality there are a few things I can say about those. For instance, all the local municipalities under iLembe District need to prioritise the need to reduce disaster risks within that particular local. This means that there has to be a unit that deals with disaster management within the local....."

Whilst on the other side of the coin, the Speaker is of the view that working with communities, volunteers and sectors across all the societal spectrum regarding the disaster risk reduction initiatives is of vital importance. It also points to the world-wide view that for any institution to have a formidable plan or strategy, all stakeholders should be brought on board. It is also noteworthy that this has been advocated by the Disaster Management Amendment Act 16 of 2015 which calls for consolidating all the sector plans with those of the local municipality in order to have a well-coordinated and structured plan towards disaster risk reduction. He also advocates for the identification of vulnerable areas which this analysis later deals with on the theme, 'Comprehensive Disaster Risk Assessment' later on this chapter. The harmonisation of different information from all the stakeholders with that of the Municipality cannot be over-emphasized. And as such the municipal Speaker (19 October 2016) as the Chairperson of the Council suggested:

"Councillors need to work together with the communities they serve, community volunteers, different sectors in order to plan towards disaster risk reduction, identify vulnerable areas in the wards harmonise all such information be taken up to the relevant Departments the Municipal Disaster Office."

It is also important to note well that the views that have been captured above are the views of politicians. The analysis further looked at the how the Municipal Manager as an administrative Head views the issues around the strategies that her municipality need to embark on. The Municipal Manager (8 November 2016) is of the conviction that a strong institutional basis is needed, she furthermore

points out that these strategies are bound to be a failure if a thorough assessment of risks has not been undertaken. She points out to the issues of monitoring and having in their possession as the Municipality early warning systems (EWS) in order to prepare for any hazard that might be coming their way. It was also evident in her response that the issue of the budget is unavoidable regardless of the fact that Ndwedwe Municipality is grant-dependent. She also makes a strong suggestion about putting together plans from all the stakeholders. This is how the Municipal Manager (8 November 2016) extrapolates on the issues that have been mentioned:

Before getting into the initiatives, or strategies, this has always been a very contentious issue within the District itself. Why MM? The strategies that we seem to agree on, as a District, are very good, however, hell breaks loose when those have to be implemented in a rural municipality like Ndwedwe. Let me name but a few:

- *Ndwedwe needs to render the disaster management issue a municipal priority with a strong institutional basis. This means we have to have a well-established disaster Unit within.*
- *We have to be able to, not only, identify but do a thorough assessment of risks, monitor them and have means to detect any hazards that might be coming our way.*

9.2 Barriers to the Implementation of the Current Strategies

The overarching factor with regards to the barriers or challenges to the current strategies is basically that the research deals with the rural municipality. Being a rural municipality has its own adverse implications. To start with, Ndwedwe Municipality is a rural municipality that is grant dependent and relies on government grants for its capital and operational expenditure, in other words, the municipality does not have a solid revenue base.

In the preceding chapters it has been alluded to the fact that the poorer the community the more vulnerable they are, to disasters. The poor are more likely to reside in hazardous locations and in sub-standard housing. These kinds of conditions, that communities in the rural municipalities live under, pose another challenge in terms of resilience. For

an example, a household with thatched roof houses are more susceptible to veld fires.

One other aspect is that when disaster strikes these community members, for instance when a house has been burnt down or washed away by floods, more often than not, these affected community members always decide to emigrate to the urban areas and opt for dwelling in slums. This is usually as a result of looking for jobs in the urban areas to revive their lives. Reciprocally, this emigration of community members again brings down the amount of an equitable share grant that the municipality receives from the government. That is, the lesser the population, the lesser the grant. This ultimately and further weakens the municipal financial muscle for the services that need to be rendered to the communities, hence the implementation of the disaster risk reduction strategies will definitely be adversely affected.

Mayor points out to some of the precarious factors that the municipality finds itself in:

"Our municipality does not have much budget and we depend much on the allocation that we get from the equitable share grant. We do not collect much money like the Metros and the urban local municipalities like KwaDukuza Municipality within our District. Now this has very adverse implications for the implementation of these initiatives because there is obviously a shortage of resources, human and otherwise."

The above clearly illustrates that the Municipality is not in a position to have a fully-fledged Disaster Management office in terms of the required human capital which will go in with the personnel tools of trade. This issue poses a great barrier to the implementation of the initiatives.

The implementation of the amendments of the principal Disaster Act across all the stakeholders (Sector Departments and the Council Structures) has not been put in place. However, the implementation of these amendments also depends on the availability of the human capital from the disaster management municipal office.

It has also emanated across almost all the participants and the FGD's that the issue of budget is at the centre of the challenges that a rural municipality faces in terms of the implementation of the risk reduction strategies or initiatives.

9.3 Institutional Arrangement/Framework

According to the Framework for Disaster Risk Reduction (ISDR, 2005) the issue of institutional arrangements is incorporated in the recipe for clear guidance and monitoring of the disaster risk reduction. This illustrates that disaster risk reduction strategies cannot be said to be effective if the institutional capacity of the municipality has not been strengthened. This chapter provides further analysis to municipal Disaster Management personnel establishment and the significance of training and development of Personnel, Councillors and other external stakeholders.

9.4 Municipal Disaster Management Personnel Establishment

During the interviews it emanated that the Disaster Management Office has been established by the Municipality but the personnel is not adequate. The Human Resources (HR) Manager (17 November 2016) is of the view that capable human capital in any Department of the Municipality is a strategy on its own and the same is applicable to the Disaster Management Section. He, furthermore, concedes that in the absence of this human capital investment initiative we are defeating the same initiatives the Municipality has set for its own as he elaborates:

"To be frank and sincere with you, as the municipality we have not yet taken much strides in this regard, that is, in terms of risk minimisation. The reason still revolves around the issue I have already mentioned, because if you do not have people to drive disaster programmes who else will? ... As we speak the section has only one Disaster Management Officer who has to ask for help from the District Municipality to attend to disaster issues, it is cumbersome."

The observation by the HR Manager above again elucidates the ripple effect that the issue of human capital deficit has in the disaster risk reduction strategies in a poor rural municipality. For instance, one of the interview questions dealt at length with how the municipality has disseminated the Amendments of the Disaster Management Act to role-players to assist more in terms of preparedness initiatives. That said, the Municipality is faced with the onus to disseminate these amendments but the conundrum is which personnel will accomplish this tremendous task across the municipal spectrum.

In the same vein, it then becomes inevitable that the issues of current legislation will not be addressed if the municipal institutional arrangement has not been taken care of. One of the critical issues that the Amendments of the Disaster Principal Act is that local municipalities should establish Local Disaster Management Centres – it is in such Centres where the personnel will be responsible for the implementation of policies that could have emanated from the consolidated plans from all the stakeholders. The tenets of the Act are thus basically calling for pro-activeness than reactivity. It is also incumbent upon these Centres to put in place systems to cascade the information that communities need to obtain for the purposes of preparedness for anything that might occur. Hence issues of the Early Warning Systems.

9.5 The Significance of Training Development to Personnel, Councillors External Stakeholders

One of the basic building blocks towards the effectiveness of the strategies is for any municipality to establish relevant structures within and outside the institution in conjunction with the institutional systems. Besides the personnel that this chapter has already alluded to, it is important for Councillors to provide political support within the Council and also to act as a formidable link between the municipality and the community. The issues of capacity are further emphasised by the Municipal Speaker (19 October 2016) as follows:

"The low levels of literacy amongst certain stakeholders although Municipal and Sector Departments Officials can assist on this issue. The other issue is that if the Municipality is not fully capacitated with the adequate human capital, it will still be cumbersome to disseminate such information, and hence such will hinder the implementation."

9.6 Training and Development of other Stakeholders within the Community

The training and development of the stakeholders within the community should be aimed at promoting a culture of risk avoidance by capacitating these role players through integrated education, training general public awareness programmes informed by scientific research. An integrated capacity building and public awareness strategy therefore also needs to be developed and continuously implemented

to encourage risk-avoidance behaviour by all role players, including all Sector departments, and especially in schools and in communities known to be at risk. Such a strategy will then promote an informed, alert and self-reliant society capable of playing its role in supporting and co-operating with the local municipality in all aspects of disaster risk and vulnerability strategy.

This intervention will again enable a rural municipality like Ndwedwe to strengthen the collaboration of the various disciplines and sector departments to forge a partnership approach.

The Public Participation Officer (17 October 2016) also alluded to this with regards to capacity building as follows:

"The Public Participation actually works in glove with Councillors, Ward Committee, and the Department of Co-operative Governance and Traditional Affairs. I must also mention that Ward Committees are trained in different ways as to how they should work with the communities, however, maybe much effort still needs to be put on the capacitating them regarding these strategies in particular."

9.7 Community Foot-Soldiers as the Basic Source of Information

For the purposes of who should be capacitated in order for the Municipal Disaster Office to obtain critical information from the ground, the following foot soldiers, but not limited to, are worth mentioning. It should also be clear that the following role players in a rural municipality have been mentioned by the participants as well as during the focus group discussions:

- Community Development Workers.
- Ward Committees.
- Community Care-Givers.
- Non-Governmental Organisations.
- War Rooms in each Ward where all the information about the ward is collated.
- Traditional Leadership as per the Disaster Management Amendment Act 16 of 2015.

10. Conclusion and Recommendations

Disaster risk reduction strategies in local government are still a progressive process, not yet fully implemented. This is more particularly in rural areas within local government. This article shows that the lack of institutional framework or capacity, lack of infrastructure and resources is still a prominent issue in local government especially in municipalities such as Ndwedwe Local Municipality which mainly rural. This article looked at current strategies in local government and it chose the South African Disaster Risk Assessment Model as theory or model to support the paper.

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