

Disaster management guidelines for municipalities



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1. Disaster management

Disasters such as droughts, floods, fires and oil spills are familiar events in South Africa. It is common knowledge that such events can destroy and slow down years of development planning and implementation. During the 1980s and 1990s, for example, severe droughts resulted in social and economic losses at both national and local levels. Fires and floods in particular are costly at the local level. Approximately 600 people were left homeless and over 200 shacks destroyed when a fire ravaged a squatter settlement in Alexandra township in July 1996. Local government and organisations were required to provide emergency shelters and provisions. The floods that devastated Laingsburg in 1981 resulted in widespread flood damage and the loss of 104 lives.

Local government is at the forefront of dealing with disasters. Municipal politicians and officials are usually the first people who have to deal with a disaster, and if the disaster is not too large, the municipality is often the only government body involved. This is why municipalities need to be prepared to manage a disaster.

What is a disaster and what distinguishes a disaster from a hazard? How can local government be better prepared to deal with such events? The following brief discussion will provide some background to disaster management and also some suggestions as to how citizens can be involved in future disaster management.

What does the term “disaster” mean?

The term disaster has been described as follows: "Any event (happening with or without warning) causing or threatening death, injury or disease, damage to property, infrastructure or the environment, which exceeds the ability of the affected society to cope using only its own resources."

Disasters are not always caused by physical factors. Several other factors may act together to produce human, environmental and material losses. In order to understand this process it is useful to develop ways with which to deal with disasters and put into place practical plans to manage these disasters if they should occur.

Some definitions of concepts related to disasters

Hazards

Hazards are threats to life, well-being, material goods and the environment. Extreme natural processes or technology causes them. When a hazard results in great suffering or collapse, it is usually termed a disaster.

Risk and risk assessment

Risk may be defined as the expected damage or loss caused by any hazard. Risk usually depends on a combination of two factors:

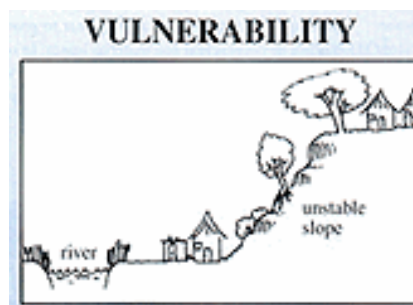
- How often and severe the hazard (e.g., floods and drought).
- Vulnerability of the people exposed to these hazards.

Risk perceptions are very complex as they are rooted in history, politics and economy. Therefore, finding suitable solutions to those at risk is not a simple, straightforward process.

Vulnerability

No matter where one is located, whether in an urban or rural environment, one's chances of experiencing a disaster are usually strongly linked to one's vulnerability to the event. The more vulnerable a community, the greater the physical, economic and emotional costs of a disaster. Vulnerability, then, is the degree to which an individual, family, community or region is at risk of experiencing misfortune following extreme events.

VULNERABILITY + HAZARD = DISASTER



People living on steep hillsides or in areas prone to floods are particularly vulnerable during periods of intense rainfall.



Hazards, caused by extremes in natural processes (such as floods) or technology, (such as mining) are exacerbated if they occur in areas where the vulnerability and risk to such events is high



When vulnerability is high and an extreme event occurs then, depending on management and preparation for such an event, a disaster may result.

Who are vulnerable to disasters?

People are described as vulnerable to disasters depending on the extent to which they are likely to be damaged or disrupted by the impact of a disaster hazard.

Mrs Mhlongo is a pensioner who lives close to a tar road that leads to town. She has to take this route to town regularly. Along certain sections of the road it becomes dangerous because of the high speed of passing vehicles. The vehicles are a hazard. Because it is the shortest route to town, Mr Mhlongo takes the risk of walking this route. If she were young and healthy, like her daughter, she would not be so vulnerable to a possible accident and disaster occurring in her life. (Adapted from the southern African disaster management training programme course, Von Kotze, A. and Holloway, A., 1996: "Reducing risk: participatory learning activities for disaster mitigation in southern Africa", International Federation of Red Cross and Red Crescent Societies and Department of Adult and Community Education, University of Natal.)

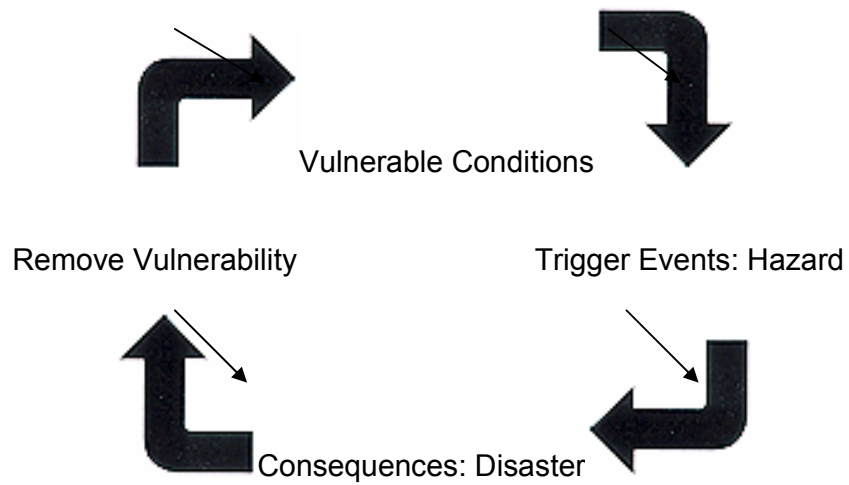
The above example shows how vulnerable people are to situations. The scale and magnitude of a disaster usually depends on how vulnerable a group (area, sector, region) is, and on the nature of the hazard. If several people are very vulnerable (for example, living in a poor area) and a hazard (e.g., flood, fire) occurs, then a disaster may result. For this reason it is an important component of disasters and, therefore, disaster management.

Vulnerability, like risk, is also complex and varies both in space and in time. Vulnerability may vary within an area and between groups of people. Vulnerability is also closely linked to the history, politics, social and economic conditions that shaped the circumstances in which people find themselves. As cities grow, unstable land is often all that is left for the poor who seek land close to their sources of income. For this reason these people often place themselves at risk by living in unstable areas prone to landslides, or marshy areas prone to seasonal floods.

As such, vulnerability to a disaster usually follows a progression arising from such factors as poverty, a lack of infrastructure, and a fragile environment. Poor communities living in makeshift structures in densely populated urban areas prone to flooding and lacking decent access routes are likely to be extremely at risk during periods of heavy rain or in a fire.

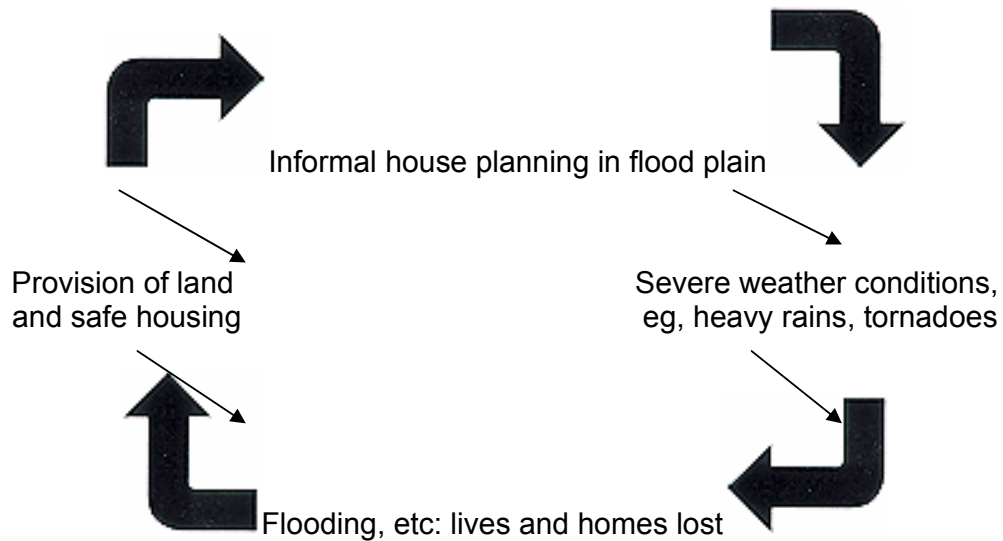
VULNERABILITY + HAZARD = DISASTER

Prevent the consequences

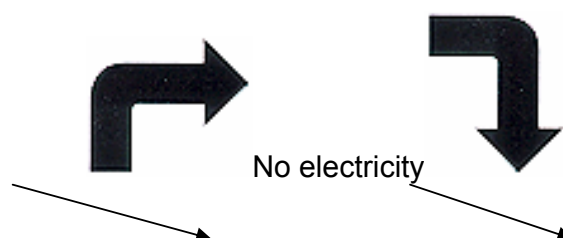


EXAMPLES OF REDUCING VULNERABILITY

Prevent the loss of life and property

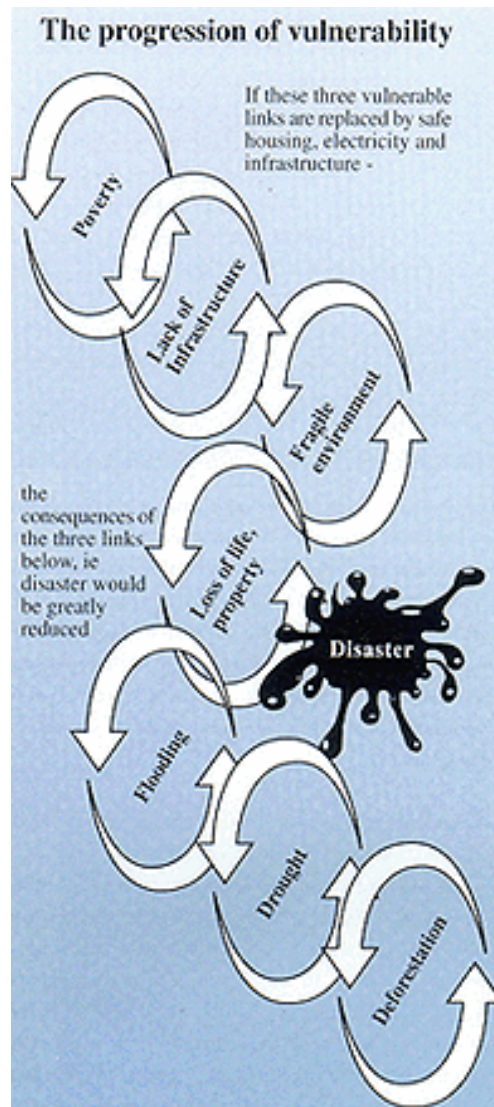
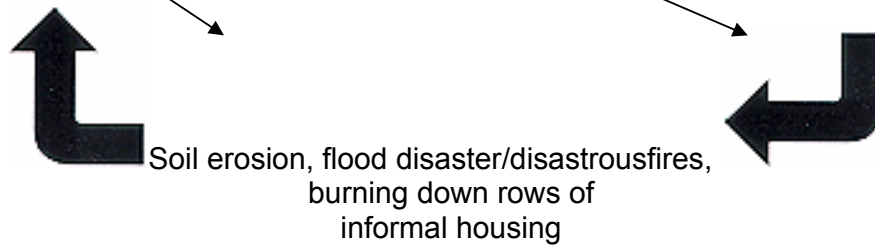


Safer conditions prevent loss of life and property



Provision of electricity

Deforestation for fuel/use of unsafe
sources, eg candles



2. Types of disasters

Now that the key terms in disaster management have been defined, the focus of this document turns to an examination of the types of disaster, which typically occur in South Africa, and the ways in which these can be managed.

When compared to other countries in Africa over the period 1900-93 (see Box 1), South Africa was ranked as the leading country in terms of the number of disaster events.

Box 1 Number of disasters observed by country in Africa during the period 1900-93	
South Africa	77
Ethiopia	70
Mozambique	57
Algeria	55
Sudan	55
Niger	50
Nigeria	50
Tunisia	48
Mali	44
Chad	43

Source: IDNDR Conference, 1994.

Such events have been costly to local government and the affected communities. Sudden-onset disasters such as floods have been particularly costly, both in terms of loss of human life and financially (Boxes 2, 3 and 4). It is estimated that the recent floods in the Northern Cape and the Namaqualand area cost the South African government millions of rand in relief aid, and considerably more in terms of road and other infrastructural repairs - not to mention the huge social costs of the disaster. It is therefore logical that a country this prone to disasters should be as prepared for them as possible.

Box 2 Examples of costs associated with disasters in South Africa	
Merriespruit slime dam (February 1994, Virginia)	Costs: Total: R45 million
Province	R0,750 million
Municipality	R6,543 million
Gold mine	R37,795 million
Northern Province (damage due to floods, January and February 1996)	R105 million
Ladysmith (damage to infrastructure due to floods, January and February 1996)	R25 million

Western Cape (damage to infrastructure and agriculture, floods, November 1996)	R36 million
Mpumalanga (floods, January and February 1996) Functions of: National government Provincial government Local government	Total: R500 million R4,1 million R355,4 million R140,5 million

Please note that quantifying exact damages is difficult and the above are the best estimates available.

Disasters are complex, making them difficult to manage and as such they require coordinated efforts between emergency services of municipalities. Disasters occur within various time scales, and can therefore be classified as those that are of a “slow-onset” type or those that are more “sudden”.

Slow-onset disasters

Slow-onset disasters, or “creeping emergencies” (named thus because it often takes months to reach a critical phase) result when the ability of people to support themselves and sustain their livelihoods slowly declines over time. Such disasters may also be aggravated by ecological, social, economic or political conditions.

Drought is an example of a “slow-onset” disaster. This is a period when there is very little or no rain, and as a result much less water and crops than people need. This creeping disaster is one of the most severe types of disaster because it affects a much larger number of people than other types of disasters.

Poor infrastructure and water supply in an area, lack of employment, inadequate, poor land and management thereof, often heighten the impact of a drought. It often exposes the underlying problems that are characteristic of an area and as such worsens the conditions (see Box 3).

Municipalities may not escape the ripple effects of droughts (often viewed as having only a rural focus). When the flow of migrants into towns and cities during a drought period increases, so do the potential land, water and food supplies become scarce, with prices escalating. In instances like this water management strategies are usually necessary (e.g., water restrictions), which often also entail additional infrastructural repairs (e.g., pipes and pumps).

Box 3 Examples of impacts of slow-onset disasters, e.g., droughts		
Aspects	Drought effect	Possible consequences
CROPS	Reduced crops Total crop failure	Reduced income, food shortage, reliance on shops, unemployment, eviction
LIVESTOCK	Weakened, disease, death	Reduced health, food shortage, sales, slaughter, reduced income
WATER	Reduction, contamination	Human diseases, human health, livestock diseases, absence and deaths, crop failure and loss, migrations
EMPLOYMENT	Layoffs, evictions	Loss of income, food shortages, increased unemployment, alcoholism, migrations
FOOD PRICES, TENURE	Increased evictions, closure of farms, food shortages	Food shortages, homelessness, migrations
GRAZING	Reduced	Livestock weakening and death, livestock sales and slaughter, impounding, conflict, land degradation
FUEL	Reduced	Disruption of domestic activities, conflict

(Sourced and adapted from AFRA, 1992).

Sudden-onset disasters

A “sudden-onset” disaster is often caused by natural events such as earthquakes, floods, storms, fires and volcanic eruptions. Although such events are more sudden, the impact can also be heightened by underlying problems associated with poverty. Communities living in overcrowded areas, especially along the banks of rivers, are particularly at risk during sudden floods (See Box 4).

Box 4 Examples of impacts of sudden-onset disasters, e.g., lives lost in flood or extreme rainfall events		
Area	Year	Impact
Laingsburg	1981	104 lives lost

Eastern S Africa (Natal) and Swaziland	1984	More than 300 lives lost
Natal	1987-1988	Loss of life
Free State	1988	Disruption of major north-south routes, more than 100 bridges damaged
Jukskei (a potential disaster)	1990s	An estimated 6000 people live below the 1:50-year flood line and could be at risk during floods
Ladysmith	1994	No lives lost, 400 families evacuated, R500m damage
Merriespruit slime dam	1994	17 lives lost
Pietermaritzburg floods	1995	173 lives lost, 1 600 houses damaged

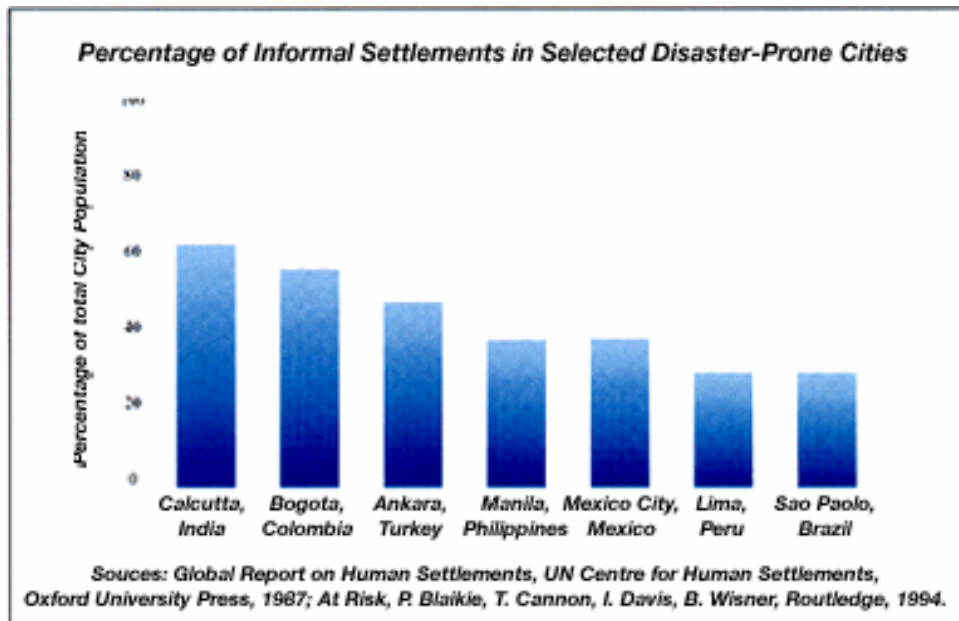
Please note that quantifying exact damages is difficult and the above are the best estimates available

In both rural and urban settings, fires are another example of a sudden-onset disaster (e.g., the Ugie fires in June 1994). Sudden, uncontrolled fires can damage large parts of plantations and agricultural land. Livestock deaths can be particularly high, frequently running into thousands.

Disasters associated with fires in poor urban areas, where shack settlements are densely located, are disasters waiting to happen, unless effective disaster management is implemented. Potential fire hazards in overcrowded urban apartment buildings with faulty or inadequate fire-prevention, are also areas of concern.

3. Some possible causes of disasters

It is important to note that disasters are not only the result of natural events. The level of development and management in a locality is strongly linked to disaster occurrence, as well as its extent and impact. Poverty is the single greatest contributor to disasters in urban and rural areas. In city areas, other causes of disasters may include rapid growth and inadequate planning, population density, ecological imbalances and inappropriate construction. Informal settlement areas are thus particularly vulnerable to disaster events (see graph below). In rural areas, the causes of disasters may be associated with poor land-use management, erosion, deforestation, lack of employment and development.



Disasters are thus a mix of both physical factors (such as intense rainfall over a short period) and other social and economic factors (such as poverty, population growth, etc.). The causes of disasters, and in particular the factors which often heighten the impact associated with them, have been identified as follows:

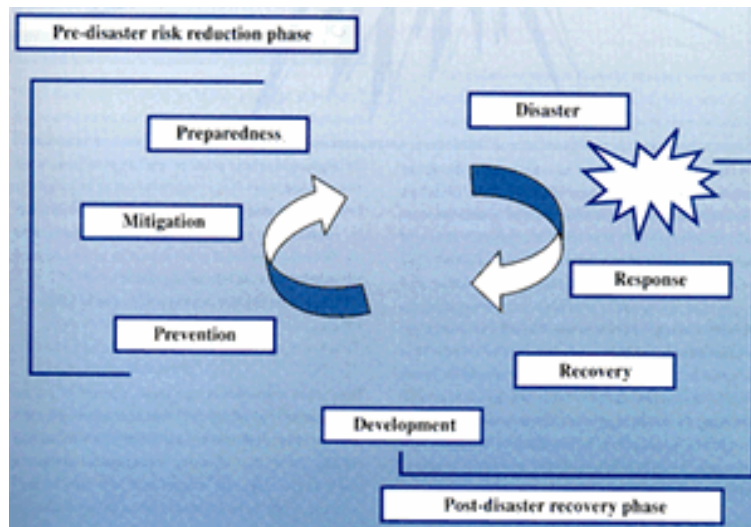
- Poverty.
- Rapid population growth.
- Unmanaged urbanisation.
- Transitions in cultural practices.
- Environmental degradation.
- Civil strife.
- Lack of awareness and information.
- Misuse or abuse of modern technology.

4. Disaster management

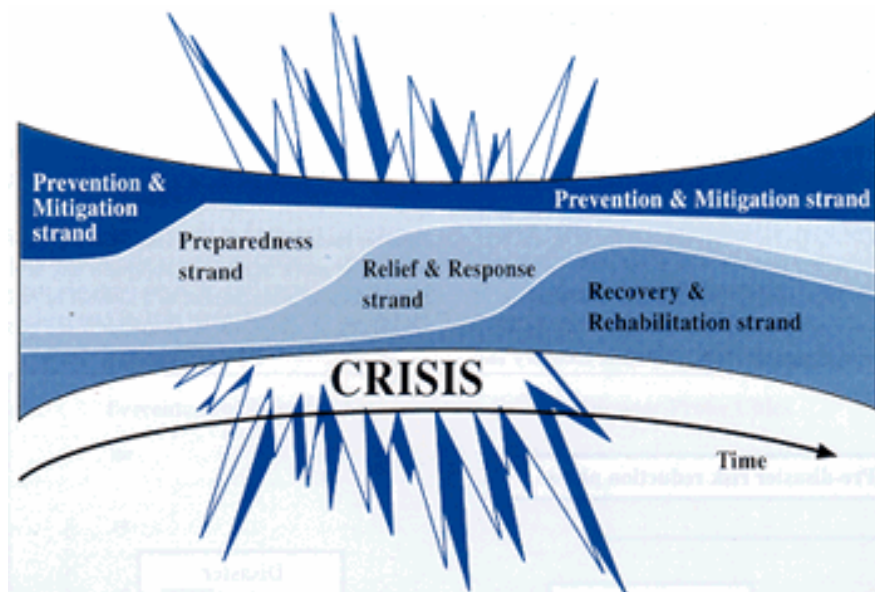
What measures can be taken to manage and possibly reduce the negative impacts of such events? Disasters are not welcome events and usually when they occur, every effort is made to reduce the impact of such events.

Disaster management should include administrative decisions and operational activities that involve prevention, preparedness, response, recovery and rehabilitation at all levels of government. Disaster management does not only involve official bodies, because non-governmental organisations and community-based organisations also play a vital role.

Disaster management can be viewed in a number of ways. The more traditional approach has been to regard disaster management as a number of phased sequences of action (or a continuum) (see below).



In this model disaster management occurs in stages which follow each other in a sequence. That is to say, mitigation and preparedness precede a disaster. While this may well be the case, it is also often observed that disaster management occurs simultaneously (as represented in the expand-contract model).



In this alternative view of disaster management, the expand-contract model shows that disaster management can be seen to be a continuous process

where disasters are managed in a parallel series of activities rather than in a sequence of actions. The relative weighting of the actions (contracting and expanding as needed) will also vary depending on the relationship between the hazard event and the vulnerability of the community involved. This approach acknowledges that disaster management usually includes a number of interventions and actions that may occur simultaneously and not always in phased succession. In the case of droughts, for example, drought relief, recovery and mitigation may often occur at the same time.

Local government should therefore be constantly involved in disaster management. Management of disasters cannot be an add-on, chaotic set of actions during a disaster. Rather, disaster management should involve the following:

- Ensuring that development is well-planned and that poorly constructed houses are not built in flood-prone areas.
- Conducting risk assessment of vulnerable areas.
- Having a clear plan or strategy to deal with disasters.
- Ensuring that various responsibilities in disaster management are clear and understood.
- Ensuring that local government receives constant training in disaster management.
- Checks on fire-prevention equipment in buildings, etc.

Thus, when a disaster occurs, these “normal” activities are expanded to rapidly deal with the event. After the disaster event, emergency activities relax (contract) but the “everyday” disaster management activities (such as training, risk assessment and monitoring) continue, ready to be expanded when the next disaster occurs.

Despite the various views on disaster management, disasters are often managed haphazardly. The approach taken to disasters may thus be as costly (or even more costly) than the event itself. People are unprepared, and when the event occurs (even slow-onset disasters) it usually triggers haphazard reactions, which often result in crisis management. Awareness of disasters and one's vulnerability to such events can, however, reduce the impacts of such events.

AWARENESS AND MITIGATION CAN REDUCE DISASTER IMPACTS

Community awareness of disasters can greatly reduce the overall costs of such events. In Laingsburg people had not previously experienced severe flooding and were, therefore, completely unprepared. As a result of this unpreparedness; 104 lives were lost during the flood. The loss of life in other areas such as Ladysmith (during the 1994 floods), where the low-lying areas are frequently flooded and the risk of disasters is higher, was minimal in comparison.

Note that the awareness here is of all people concerned and not merely officials. Community awareness and effective mitigation are, therefore, critical elements of disaster management.

The principles of disaster management

What, then, can be done to better manage disasters? The literature on the principles of disaster management is extensive and only some cases are presented here. The Asian Disaster Preparedness Centre has described examples of these principles (and more specifically in local documents proposing disaster management - see Box 5):

- The first priority of disaster management is the protection of the people who are most at risk. The second priority is the protection of the critical resources and systems on which communities depend.
- Disaster management must be an essential part of development plans and objectives.
- The effectiveness of disaster management rests on an understanding of hazard risks and the capacity to deal with them before they become a threat to a community.
- Disaster management is based on interdisciplinary collaboration among people in governments, non-governmental organisations, research and training institutions and the commercial sector of affected communities.
- Effective disaster management depends on how much commitment, knowledge and capabilities can be applied at locations affected by hazards. To achieve this, international, national and local coordination is essential to develop capable levels of self-reliance.

Box 5 Principles of disaster management

- It should address important human needs by focusing on the real causes of disasters and not merely symptoms.
- It should be driven at all levels of government.
- It should be transparent and inclusive.
- It should ensure community involvement.
- It should accommodate local conditions.
- It should have legitimacy.
- It should be flexible and adaptable.
- It should be efficient and effective.
- It should be affordable and sustainable.
- It should be needs-orientated and prioritised.
- It should involve other roleplayers, including non-governmental organisations and community-based organisations.
- It should have a multidisciplinary and integrated approach.
- It should focus on key issues.
- It must emphasise prevention and mitigation.

Past approaches to disaster management in South Africa

Despite the principles of disaster management outlined above, effective action to implement them has been slow in South Africa. Disasters in South Africa have often been managed in a crisis management way and as such have usually not been managed in a comprehensive, holistic manner. For example:

- At national level, certain previous disasters have drawn attention to the lack of a proactive disaster policy and strategy. Usually the response to disasters has been crisis management.
- Some disasters have been managed in an uncoordinated way.
- In certain cases, disasters have also highlighted a lack of data and knowledge related to disaster management and impacts. Information on the vulnerable people (in terms of nutrition) during drought periods has been lacking. This has created difficulties when trying to identify and target those who need relief, especially the rural poor.
- Disasters usually make underdevelopment and poverty more apparent, by drawing attention to the lack or maintenance of basic infrastructure - such as water supply systems - particularly in poor rural areas.

The level of readiness to cope with a disaster could therefore be significantly improved both nationally and locally. The lack of coordinated early-warning systems for several potential disasters in South Africa is surprising, considering the frequency with which some of these disasters occur. Disasters have also been primarily focused on response and relief rather than on management and reduction of risk.

Present official approaches to disaster management in South Africa

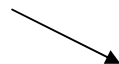
Because of this the government is taking the issue of disaster management seriously. It has recently set up a task team to examine disaster management and to produce a Green Paper on disaster management. South Africa has also recently been accepted back into the international disaster management arena (e.g., South Africa has two members on the Scientific Technical Committee of the International Decade for Natural Disaster Reduction - IDNDR). The IDNDR involves several countries in collaborative initiatives and actions to reduce disasters.

Government has approved the establishment of formal structures, from national to local levels, for the management of disasters. At present, the Department of Constitutional Development has overall responsibility for the disaster management function. These structures at present are:

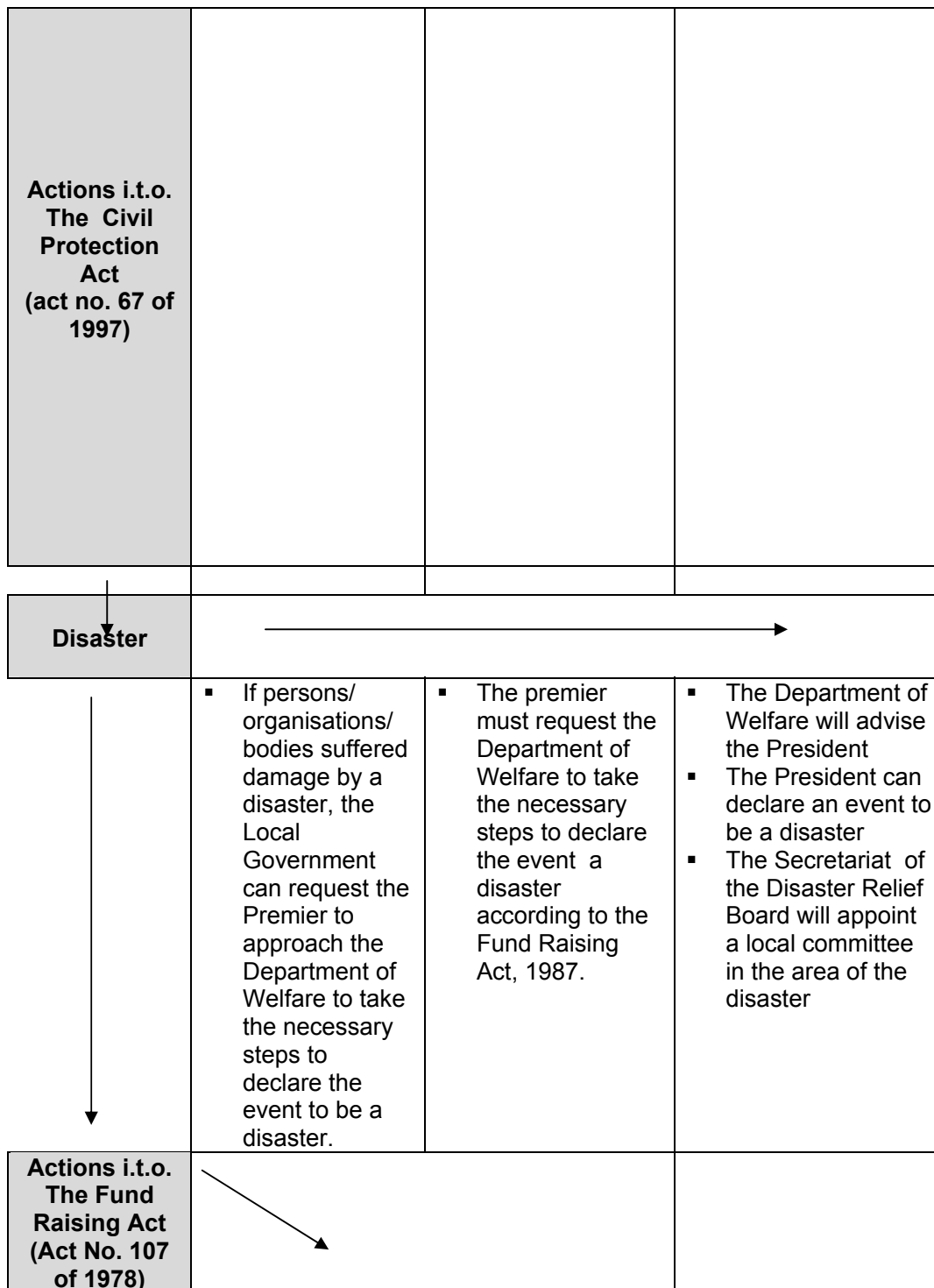
- A national disaster management committee - national level.
- Similar structures at provincial and local government levels.

The Green Paper will critically look at these structures and make proposals for ways to improve them. It will also look at how disaster management is coordinated and the roles that different levels of government must play.

National, provincial and local government have different responsibilities for disaster management in terms of current legislation. The main law governing disaster management is the Civil Protection Act, 1997. The responsibilities of the different levels of government are summarised in the table overleaf.



Local Government	Provincial Government	Central Government
<ul style="list-style-type: none"> ▪ The prime responsibility for handling disasters vests with the local government. ▪ Immediate response normally by the emergency services. ▪ Should activate it's contingency plan. ▪ If the local government cannot cope with the situation using only it's own resources it must call on the province for assistance. 	<p>The Premier can-</p> <ul style="list-style-type: none"> ▪ Take the steps necessary to handle the situation. ▪ If the circumstances are such that a state of disaster must be declared, he may for a period of four days take any steps i.t.o. the powers invested in him by the ordinance; and ▪ The Premier may render financial assistance to the local government i.t.o. the ordinance. 	<p>The Department of Constitutional development will advise the Minister-</p> <ul style="list-style-type: none"> ▪ The Minister of Provincial Affairs and Constitutional Development has the power to declare a state of disaster if in his/her opinion it appears that any disaster is of such a nature and extent that extra-ordinary measures are necessary to assist and protect the country's inhabitants. ▪ The Act does not make provision for any funding from national level



At the local level municipalities should be responsible for the implementation and maintenance of an all-hazard, full-spectrum comprehensive disaster management programme, ensuring:

- Prevention.
- Mitigation.
- Preparedness.
- Response.
- Rehabilitation and reconstruction.
- Development.

If a disaster occurs at the local level, the prime responsibility for handling the disaster is vested with the local authority. The local authority will activate civil protection/disaster management emergency plans to combat the effects of the disaster (see the flow diagram showing the role of local government in disaster management).

The basic objectives of the response at local level are to save lives; prevent an escalation of the emergency; relieve suffering by fulfilling the basic needs for shelter, food, water and medical care; protect property; and facilitate subsequent recovery from the emergency.

It is thus the prime responsibility of the local authority to have a contingency plan to deal with any incident such as an emergency and a disaster event. Disaster management should be included in a municipality's integrated development plan.

If the severity of the event is of such a nature that the local authority cannot manage using its own resources, it must inform the province concerned and request assistance in accordance with the relevant provincial ordinance.

Local disaster management should also be multidisciplinary, transparent and inclusive, and aimed at reducing vulnerability. While being inclusive, disaster management has to be taken seriously by government departments and it is important for each department or sector involved in disaster management to assume ownership of its delegated responsibilities. (For further information, contact the Director: Disaster Management at the Department of Constitutional Development or the contact person responsible for disaster management at the provincial level.)

Examples of local disaster management strategies

In order to ensure that local government is an effective tool, municipalities need to be better prepared and have contingency plans in place in order to manage disaster. Examples of disaster management strategies are provided below. These are not the only ways that disasters can be managed and are only meant to prompt municipalities to become better prepared for disasters.

- *Prevention:* Municipalities can better prevent a disaster by conducting certain activities before a disaster occurs. These can include constructing a dam or levee to control flood water, or control-burning programmes in a veld fire area.
- *Preparedness and mitigation:* A disaster plan and structure (e.g., disaster committee at the local level) should be established. Each plan will be site or local specific and as such must be tailored for the municipalities concerned. For example, coastal towns may develop a series of building codes so as to reduce losses in the event of heavy rains and strong winds associated with a cyclone. Rural towns may have to plan for veld fires, droughts and improved water management.

Preparedness measures such as the maintenance of inventories of resources and the training of personnel to manage disasters are other essential components of managing a disaster. Furthermore, this should be an ongoing, regular function of local government departments.

Risk assessments (identifying those areas and people that may be at risk of a disaster before a disaster occurs) are also essential and may complement development strategies in local areas. The development of “suitable” housing for those living in urban, flood-prone areas cannot be undertaken without a risk assessment for development (and flood-reduction planning). Efforts do not, therefore, have to be doubled and the two (development and disaster reduction) can occur simultaneously.

- *Response and relief:* If a disaster does occur, then response and relief have to take place immediately - there can be no delays. Delays will occur if municipalities have no clear plans to manage such events. It is therefore important to have contingency plans in place. Imagine the following scenario:

A flood has occurred in an area and there are also strong winds. Fear and chaos break out. Members of the public are swamping emergency services with pleas for help and the mayor’s reputation is on the line.

- A well-managed team of local government players should be prepared and know where to go, what to do... If the situation is managed in a crisis way, people rush off in all directions, waste valuable time, and even make serious mistakes as a result of their actions.
- Search and rescue plans need to be clear and all members of the municipality need to know their role and function in such activities. Basic needs such as shelter, water, food and medical care also have to be

provided, and a plan needs to be in place (outlining who is responsible for such activities, etc.).

- *Rehabilitation*: Interventions are also needed after a disaster occurs. In many ways this is the most difficult period for the victims. Job-producing activities, construction works and public works programmes may be needed, to name but a few. The victims cannot be forgotten once the disaster has abated.

Disaster management, as shown by these examples, requires effort and commitment by the various roleplayers. The capacity to handle such events must be built, and training programmes are essential. Duplication of efforts should be minimised and financial resources appropriately controlled. In certain cases, the expand and contract model is best, with local government personnel conducting disaster management in their “everyday” activities and then “expanding these” when needed. This is best achieved under the management of a disaster committee rather than establishing a costly disaster management centre. In some cases, however, the disaster management centres may be better.

Local government cannot, however, conduct disaster management in isolation. Local communities and the commercial sector have to be engaged.

We can learn from each other!

Local communities can do a great deal when it comes to preventing and preparing for disasters. No matter where you are located, either in the countryside or in an urban area, you can play an important role in disaster prevention and management.

Local disaster management roleplayers, e.g., non-governmental organisations and community-based organisations

Non-governmental organisations and the private sector have often played an important relief role in disasters, particularly drought. Some evaluations of past involvement of non-governmental organisations and community-based organisations in past disasters have shown that non-governmental involvement in disasters has generally been positive. This is not to say that all community committees worked well. Some have been more successful than others. Conflicts between government and non-governmental organisations, and between community groups, can arise, delaying and hampering disaster management activities.

Community groups have and do play a major role in disaster management. They are quick in response, have local knowledge and expertise to their advantage, and can also act as important channels for awareness-raising and

education. Disaster management, therefore, needs to be a coordinated effort between government, various institutions, non-governmental organisations, community-based organisations and the commercial sector. Where communities are not directly involved and are passive recipients of relief, the result may be the aggravation of a "dependency" syndrome. Existing community networks and agencies can therefore play a major role in disaster management, but the pressing need is for such groups to expand their roles in disaster reduction and mitigation activities and not merely be focused on relief activities.

Local disaster management roleplayers, e.g., commercial companies

The commercial and private sector can also play an essential role in disaster mitigation. Usually the role of such players has been in the field of relief and recovery. While the value of such contributions is great, the commercial sector should play a greater role in the mitigation of disasters through training, education and capacity-building. Involvement by this sector can also be expanded from that of relief to proactive mitigation.

Disasters are often large and unwieldy events to manage and cannot be tackled by an individual sector alone. The coordinated team efforts of a number of roleplayers are an essential part of the management of a disaster. In the case of Parys (see Box 6) a potential flood disaster was successfully managed because the municipality worked together with local business and their own community to save their town from damage and potential disaster.

Box 6 Local government, the commercial sector and the community save Parys from a potential flood disaster

Following a period of heavy rains in 1996, the Department of Water Affairs and Forestry took a decision to open several sluice gates on the Vaal dam to allow for a controlled release of water. Because of the volume of water being released and the low-lying aspect of some of the towns (Parys and Vereeniging), a flood warning was issued.

This flood warning prompted a combined effort between a Durban-based company, the municipality in Parys (e.g., town clerk and town engineering department) and the community. Water structures (consisting of two 50m lengths of tubing filled with water and similar to structures which were successfully used to control floods in the USA, Canada and Europe) helped divert a strong side stream of water back into the Vaal river, thus saving the town from property damage and possible loss of life. The simple structures were quickly put in place, and once the danger period was over, these were rolled up and stored, ready for use in a future emergency.

An alert municipality together with a committed local business sector and the general public saved the town of Parys from a potential disaster.
(Source: “Munisipale Ingenieur”, April 1996).

Who can be involved in disaster management in rural areas?

Communities, particularly those that are marginalised, have a range of coping mechanisms that enable them to survive “normal” everyday crises and longer-term disasters. Disaster coping mechanisms among the poor are a response to both the event and the underlying development constraints that they face. Disaster coping strategies include risk strategies, the sale of household or productive assets during a disaster, and social relations-based strategies (utilisation of kinship relations, community-based, etc.). Knowledge of these strategies and how and when they are implemented is fundamental to any disaster management programme.

Who can be involved in disaster management in urban areas?

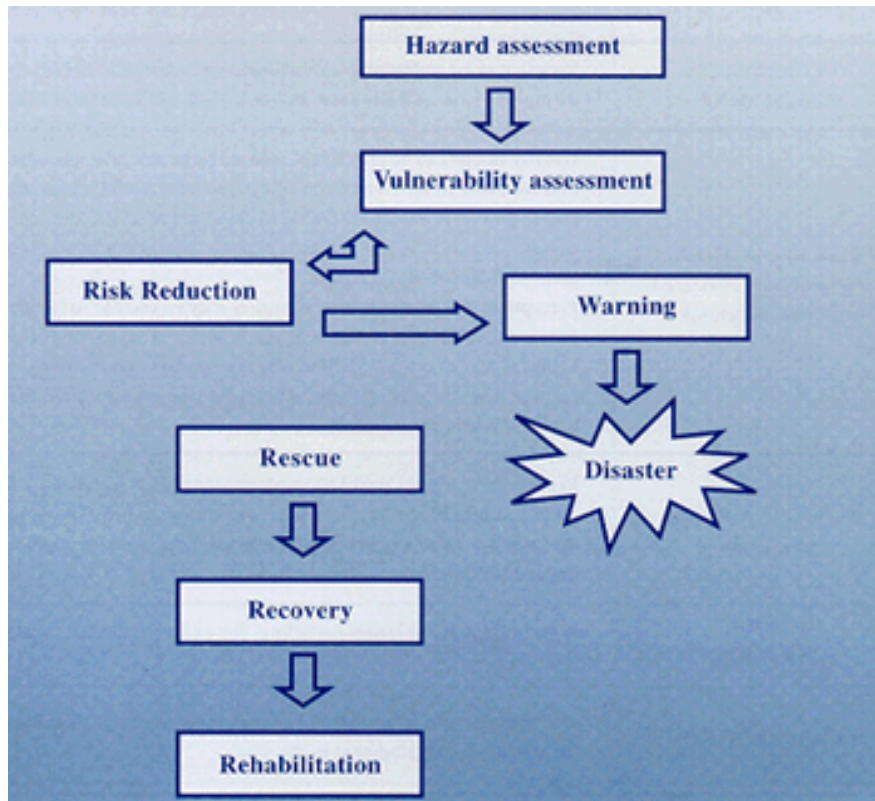
Disaster management and mitigation in urban areas could include awareness campaigns that could be built onto existing organisational meetings in areas. Awareness about fires before the winter season could be raised and officials or owners could ensure that fire-fighting equipment is operational and functional, particularly in congested buildings.

Community organisations, together with various officials and organisations, could also be involved in flood-disaster mitigation. A warning system could be organised, and planners and other technical groups could be involved in the protection of river banks and in ensuring that housing development occurs in “safe” areas.

5. Disaster mitigation

Disasters will happen in the future. Preparedness and mitigation of such events, as seen in the Parys example, can do much to lessen the impact of such events.

Disaster mitigation refers to measures that can be taken to minimise the destructive and disruptive effects of hazards and thus lessen the magnitude of a possible disaster. Disaster mitigation can occur at any time, but is most beneficial if taken before an event escalates into a severe disaster. Disaster management and mitigation activities can also be closely linked to development, thereby maximising long-term development as well as risk reduction.



Disaster mitigation can be achieved through proper engineering, spatial planning, municipal management and conflict resolution. Examples of disaster mitigation are: protecting deep and shallow wells in a cholera-prone village, planting trees to stabilise a deforested landslide-prone slope, conducting household education campaigns on safety with fires before winter months, public works schemes in drought-prone areas, and a host of others (see Von Kotze and Holloway, 1996).

An example of a disaster mitigation programme

A more detailed example of disaster mitigation of a sudden-onset disaster, such as a flood, is outlined below. The case has been generalised and the actions that could be taken will vary from area to area.

Therefore, this example cannot be used as a menu for disaster mitigation. Rather, the intention is to give an idea of the various types of mitigating measures that could be employed in flood disaster management.

Mitigation for a flood disaster in an urban area - Alexandra	
HAZARD ASSESSMENT	Determination of flood risk including 1:50-year flood line and the regional maximum flood for a site. In the case of Alexandra, previous estimates indicate that 6 000 people (although the number is probably much higher) live in shacks below the 1:50-year flood line.
VULNERABILITY ASSESSMENT	People can be vulnerable to uncompacted materials previously dumped into channels, erosion of river banks, etc.
RISK REDUCTION (Some problems associated with risk reduction)	Usually floods can be effectively reduced by structural adjustments that are made to the river. Such adjustments, e.g., flood levees, may not, however, always be suitable in flood-prone areas. Provision of "safe" houses may also not be a popular solution in flood-prone areas such as urban river areas. Perceptions that risk reduction measures may be counter to housing provision, reluctance to move to more secure areas in the fear of losing access to permanent shelter, although understandable, may all hamper disaster management. Risk reduction therefore requires careful planning and effort.
FLOOD WARNING SYSTEMS	River watch systems could be implemented with the assistance of other institutions, non-governmental organisations and other community groups. Sirens and the use of a radio system could be used to warn residents of an impending flood.
RESCUE OPERATIONS	A co-ordinated operation, including, for example, the SADF, SAPS, Red Cross, etc.
REHABILITATION	Will vary according to area and development needs. It should not run counter to development in the area.

6. Conclusion

To be effective, the approach to managing disasters should cover all aspects of disaster management and also needs to include such aspects as prevention, mitigation, preparedness, response, recovery and disaster-related development. Some of the activities that are required for effective preparation are: vulnerability assessment, planning, information systems, institutional framework of development, warning systems, public education and training, development of a short-term and longer-term mitigation strategy. These activities should be an integral part of “normal” local government activities that are expanded when needed (vulnerability assessment, for example, is a long, involved process that cannot be conducted only when an isolated disaster occurs).

An important aspect of long-term disaster preparedness is that such plans should not be counter to, or hinder, development. In some previous disasters, for example, it has been shown that the negative impacts, particularly on the poor, have been the result of the physical causes of the event as well as a result of poor or inadequate development. Poverty often exacerbates vulnerability to disasters, and disasters in turn contribute to the continuation of the cycle of poverty. Disaster management initiatives and plans should therefore not run counter to development and should, where possible, complement those programmes that already exist in an area.