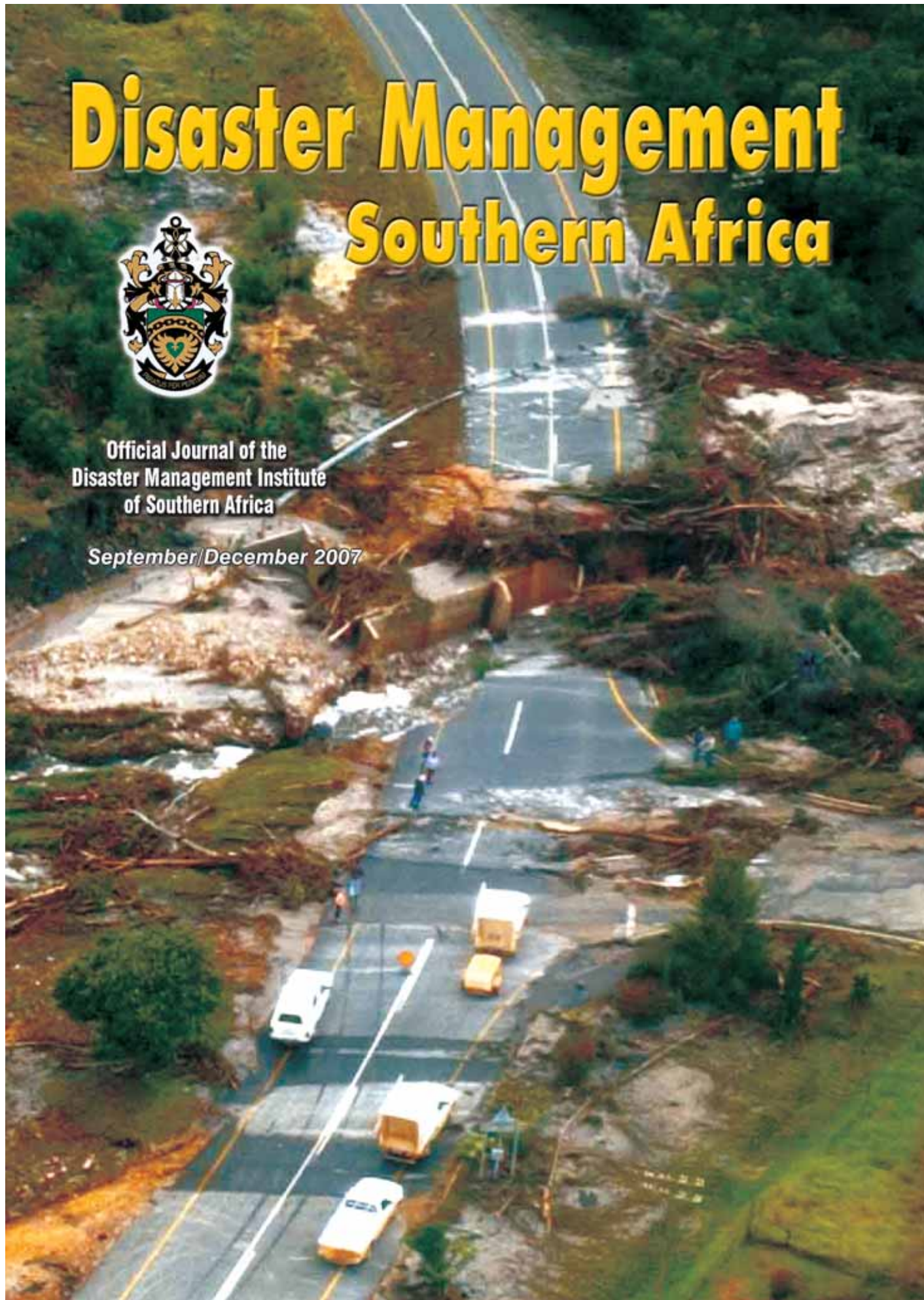


Disaster Management Southern Africa



Official Journal of the
Disaster Management Institute
of Southern Africa

September/December 2007



emergency



InflaTec Easy

Inflatable Rescue Tents



Head Office: 011 975 0633

emergency | homecare | diagnostics

WEINMANN
medical technology

Disaster Management Southern Africa



Publisher: Debbie Myer
Editor: Schalk Carstens
Assistant Editor: Lavenia Nicholson
Production Editor: Lindsay Myer
Editorial Board: Greg Pillay
Dewald van Niekerk

PUBLISHERS

Delinds Publications cc
12 Delta Road, Blairgowrie, Randburg,
PO Box 72366 Parkview 2122
Tel: (011) 886-5985 Fax: (011) 886-1332
E-mail: delinds@mweb.co.za
Cell: 083-266-6662

Disaster Management Institute of Southern Africa

Tel: (011) 822-1634 Fax: (011) 822-3563
Email: disaster@disaster.co.za
PO Box 7130 Primrose Hill 1417
Suite 5, 123 Riefontein Rd Primrose Germiston
www.disaster.co.za
Administrator: Karin Muller

DMISA EXCO

Pat Adams
(President)
Mal Reddy
(Deputy-President)
Recruitment & Public Relations
Peter Mokoto
(Immediate Past President)
Regional Matters
Andre van Rensburg
(Exco Chairperson)
Finance and Administration
Anthony Kesten
Training, Skills Development & Tours
Johan Minnie
Marketing and Website Management
Pat Reid
Protocol, Policy Writing and Legislation
Schalk Carstens
Journal Production
Mandisa Nohashe
Special Projects

Copyright: Material appearing in this issue may not be reproduced without the permission of the editor or publishers in any form whatsoever.

The Publishers and Editors are not liable for any damages or loss incurred as a result of any statement contained in this magazine. Whilst every effort is made to ensure accuracy in this publication, neither the Publishers nor Editors accept any responsibility for errors or omissions in the content and reserve the right to edit all contributions. The views expressed in this publication are not necessarily those of the Publishers or Editors.

Disaster Management Southern Africa

is published by Delinds Publications cc

and is the official publication of the

Disaster Management Institute of Southern Africa (DMISA)

October/December 2007 Vol 4 No 1

CONTENTS

- 2.. Editor's comment
 - 4.. Message from the President
 - 6.. Disaster Risk Reduction, Disaster Risk Management and Disaster Management: Academic rhetoric or practical reality?
 - 10.. The Western Cape Provincial Government's Study tour to Cuba
 - 12.. Getting to know the President: Pat Adams
 - 16.. Disaster Risk Assessment at municipal level in South Africa: The need for a multi-disciplinary approach
 - 18.. Disaster management training for politicians and officials on municipal level with the focus on the integrated development planning process
 - 20.. Using Satellite Imagery, Remote Sensing and Geographic Information Systems for South African Disaster Management
 - 22.. The establishment of a resource centre for the provincial disaster management centre in the Western Cape
- Product news:**
- 23.. The new Rural Metro disaster management work station
 - 24.. Satellite communications for disaster management

Editor's comment



EDITOR
SCHALK CARSTENS

It has been a while since our last publication and a great deal has happened in the DMISA and the Disaster Management field up to now.

Southern Africa has again suffered severe flooding especially in areas such as Kwazulu Natal, Eastern and Western Cape. Other disasters were the major veld and forest fires, which occurred in Mpumalanga as well as the continued fires in informal settlement areas across the region.

The Disaster Management Act in South Africa has shown to be the answer to effectively deal with disasters. This includes the reduction of the risk to disaster. We have witnessed several provinces and municipalities focussing on the implementation of the disaster management act and this is evident in the following areas:

- ◆ Establishing Intergovernmental Committees
- ◆ Publication of their Frameworks
- ◆ Establishing Disaster Management Centres
- ◆ Appointment of Heads of Centres and additional staff
- ◆ Disaster Information Management Systems
- ◆ Development of Disaster Management Plans

It is unfortunate though that some areas show vast progress and commitments towards the implementation of disaster management and in other areas the progress, commitment and support is lacking. This non-compliance is almost always coupled to the lack of capacity and knowledge in the field of disaster management. This is where DMISA has a definite role to play. The disaster management practitioner should have the necessary practical and theoretical experience of the specialised field, hopefully with the applicable /appropriate disaster management diploma and / or degree. The Head of Centres position could even be coupled to a person with a postgraduate qualification. DMISA has already developed a job description, which could assist in setting the standards.

One of my main concerns is the 2010 FIFA World Cup. Some National Departments have signed agreements with FIFA and a Local Organising Committee (LOC) has been established

for this event on National level in South Africa. The rules/regulations of FIFA are diligently followed and budgets are provided for this purpose. Various line departments are currently hard at work with the implementation of their part of the agreements and all this is done to ensure the successful hosting of the event in 2010. Unclear and undefined at this stage is the role and function of disaster management in the 2010 FIFA WC event.

The Disaster Management Act in South Africa provides clear mandates, through policy and guidelines on how to identify and reduce risk to disasters, prepare and respond to emergencies and disasters, structures, mechanisms as well as the necessary systems. The 2010 FIFA WC planning guidelines now provide similar policies, structures and mechanisms. At this stage, there is a lack of clarity of disaster management roles and responsibilities.

To overcome this uncertainty, it is suggested that two levels of planning be recognised, namely 2010 FIFA WC event planning which will focus on the event itself (stadiums, fan parks, VIP protection, upgrading of infrastructure and emergency plans for specific buildings and venues). The other planning levels that are currently not properly adhered to are the role of the Disaster Management Centres in respect to the 2010 event on all spheres of government. These centres should ensure that the increased risks to disasters, due to the 2010 FIFA WC, are catered for in disaster management planning processes. The 2010 FIFA WC would definitely place a greater burden on the provision of basic and essential services and on air, road and sea transport. What if a natural and/or human made disaster should occur during the 2010 FIFA WC? That would be a definite recipe for a major disaster. Enough of my "shop talk" now and ...

A hearty thanks to all who have contributed towards this special "Conference 2007" edition. Without your input, this publication would not be possible. Also a special word of thanks to Debbie Myer (publisher) and Lavenia Nicholson (assistant editor) for their hard work, commitment and support in making this publication possible.

To all DMISA members and delegates attending the conference, may they have two enjoyable days and please start working on your articles for the next publication.



ASSISTANT EDITOR
LAVENIA NICHOLSON

Message from the President



PATRICK ADAMS
PRESIDENT



Esteemed members and delegates

It is my privilege and honour to welcome you to the DMISA Conference 2007.

The Disaster Management Institute of Southern Africa this year hosts its Annual Conference in collaboration with Cacadu District Municipality at Mentorskraal Guest Farm in the beautiful seaside town of Jeffreys Bay.

We wish to thank the Department of Housing, Local Government and Traditional Affairs, Eastern Cape and the Cacadu District Municipality for providing financial support which will undoubtedly contribute towards the success of our conference.

The latest draft of the Safety at Sports and Recreational Events Bill was published in August 2007 and we are heartened by the latest amendments which show regard for comments from DMISA and the Disaster Management fraternity. With the 2010 Soccer World Cup approaching, we together must ensure that Disaster Management takes its rightful place in ensuring safety before, during and after mass events with public safety risks.

We are aware of continuing efforts and sterling work done by the National Disaster Management Centre in South Africa to provide guidelines for the implementation of the Disaster Management Act and the National Disaster Management Framework. DMISA members are urged to continuously provide meaningful contributions in this regard. We are eagerly awaiting the release of the guidelines to assist functionaries to plan and implement their activities at all levels.

May we, by always keeping in mind those in our country and globally who have suffered and passed on because of disasters, strive harder to provide for a reduction in disaster risk, a reduction in the vulnerability of people and infrastructure and also a marked increase in capacity to deal with the effects to mitigate and prevent disasters.

This was the first year that DMISA was requested to participate in the Disaster Management Annual Report. We duly provided the National Disaster Management Centre with our contribution and trust this will assist the Minister of Department Provincial and Local Government to present an integrated Annual Report to Parliament in terms of Section 24 (2) of the Disaster Management Act.

DMISA wishes to convey its congratulations to Mr Lance Williams with his appointment as Head of the National Disaster Management Centre. We wish him every success in his endeavours and assure him of our co-operation and undivided support.

I take the opportunity to convey our sincere appreciation to our eloquent speakers who will be presenting papers at this conference. I have no doubt that their knowledge and insight which they will be sharing with us, will greatly assist in our endeavours to implement a holistic and effective approach to the management of disasters in South Africa.

To all my colleagues who have worked so hard to make this conference a success, I offer my heartfelt gratitude.

Have an enjoyable and pleasant stay, take care and travel home safely.

- The perfect media liaison tool for the SAPS
- Ideal for enhancing flow of information from SAPS to the public
- Assistance with crime prevention operations
- Incident command support during hostage situations



This Eagle Incident Command vehicles just completed by Fire Raiders for the South African Police Service offers the following features:

- Latest TETRA radio communications
- 12 x digital hand portable radios
- Cellular communication
- Laptop connected to DVR with 3G internet connection
- GPS system
- Digital tactical planning board
- LCD heads up displays from roof camera/ laptop or remote camera
- Military spec Sound Commander PA system
- Military spec Roof mount camera on mast extendable to 3m
- Military spec remote camera full PTZ function up to 1km range.
- Conference facility with air-conditioning and fridge.
- Outside awning.



Rising to the challenge

Fire Raiders (Pty) Ltd - Tel: +27 11 918-4970
 Trevor Fiford - Cell: 082 651 2580 - Email: trevor@fireraiders.co.za
 Marius Koekemoer - Cell: 082 444 1402 - Email: marius@fireraiders.co.za

Disaster Risk Reduction, Disaster Risk Management and Disaster Management:

Academic rhetoric or practical reality?



DR. DEWALD VAN NIEKERK
DIRECTOR: AFRICAN
CENTRE FOR DISASTER
STUDIES
NORTH-WEST UNIVERSITY,
POTCHEFSTROOM
CAMPUS



Much has been said and debated in the past year around the issue of disaster risk management vs. disaster management. Many proponents of disaster management indicate that South Africa has hardly come to term with the concept of disaster management and yet we now bring in another foreign term: disaster risk management. This paper will aim to address the relation between these two terms and show that they are not mutually exclusive or substitutive. In this article (which is biased towards the use of the term disaster risk management) I will aim to show that yet another paradigm shift is needed. This time not towards a more proactive approach to disaster management but rather towards multi-sectoral and multi-disciplinary inclusively.

In order to provide a valid foundation for my arguments I will first examine the study of disaster risk. Through this very brief analysis I will prove that the main focus in our study of disasters is, and should be, their inherent risk and not the phenomenon itself. I will then define the terms *disaster risk management*, *disaster risk reduction* as well as *disaster management* and by doing so I will prove the fundamental differences of these three terms and their application within our contemporary society.

The study of disaster risk

History has shown that societies sustain annual losses due to the impact of natural and anthropogenic hazards on unnaturally created vulnerable circumstances. The notion of disaster has undergone a dramatic transformation of meaning over time (see the work of Quarantelli, 1998). In the early development of humankind and civilisations, many, if not most of the cultures around the world viewed disasters as acts of God (Drabek, 1991:4), or attributed to it some false casual attractions such as "Des Astro" or "evil star", "bad luck" and "blind faith" (Dombrowsky in Quarantelli, 1998:19). Disasters were perceived as inevitable events which impact on humanity due to our inability to please gods, or by provoking their wrath. Development in science gradually started to question these

perceptions and "truths" of disaster (see the early work of authors such as Westgate, O'Keefe, Wisner, Davis, Ritchie, Cardona, Jeggle, Cannon, Kent to name but a few). The investigation into the intrinsic nature of disasters as well as the human reaction to and underlying causal factors creating disasters, progressively came under the spotlight.

The focus on disaster and risk came about through various initiatives and events since the Second World War. The scientific study of disaster and risk is one such event. A focus on the development of disaster risk reduction and management would therefore be incomplete without a discussion of the roots of disaster studies and research both within the social as well as natural sciences.

Some of the earliest recorded ideas on disaster and risk within the social sciences were expressed by the likes of Carr (1932) and Sorokin (1942) who questioned the influence of catastrophe on social patterns. Although these authors were known to some in this field of study, they were seldom explicitly acknowledged for their pioneering work (Quarantelli, 1998:1), and they greatly influenced the subsequent works by others in disaster studies. Some of the first systematic work in disaster studies and research occurred in the 1950s (Eldenman, 1952; Powell, Rayner & Finesinger, 1952; Quarantelli, 1954 & 1957; Moore, 1956; Fritz & Williams, 1957) and 1960s (Drabek & Quarantelli, 1967; Dynes & Quarantelli, 1968), with a noticeable heightened interest in the 1970s (Doughty, 1971; Hewitt & Burton, 1971; Kreps, 1973; Dynes, 1974; Mileti, Drabek & Haas, 1975; Glantz, 1976; Westgate & O'Keefe, 1976; O'Keefe, Westgate & Wisner, 1976; Jager, 1977; Torry, 1978; Turner, 1978). These earlier theorists approached the concept of disaster from a social science as well as a natural/physical science perspective. It is also evident in this period (1970s) that European scholars were much more interested in this phenomenon than their American counterparts. The enormous contribution of American social science scholars since the 1980s can, however, not be denied.

Gilbert (in Quarantelli, 1998:11) indicates that the social science perspective approached the study of disaster from three different paradigms, that of content research, chronological development and lastly, cleavages. In the first instance disaster was viewed as a duplication of war - an external agent can be identified which requires communities to react globally against the "aggression". The second (chronological development) views disaster as an expression of social vulnerability - disaster is therefore the result of underlying community logic or social processes. Thirdly, disaster is an entrance to a state of uncertainty - disaster is the impossibility of identifying and defining (real or perceived) dangers. It is therefore an attack on our perception and known reality. Cardona (2003:14) and Kreps (in Quarantelli, 1998:33) are of the opinion that the above early paradigms within the social science emphasised the reaction and perceptions of communities during and after emergencies and did not explicitly focus on issues of risk, or mitigating the risk of physical harm and social disruption before an event had occurred.

The natural and physical science approach to disaster emphasised the hazard component in terms of hydrometeorological, geodynamic and technological/anthropogenic phenomena such as earthquakes, floods, mudslides, cyclones, industrial accidents and nuclear fallout. The natural sciences therefore aimed to understand the dynamics of hazards (Smith, 2002; Cutter, 1994) and from this standpoint tried to quantitatively determine (and simulate) its possible occurrence and impact on humans and the environment. Dombrowsky (in Quarantelli, 1998:28) cautions that although this approach has proven to be scientifically sound, it is impossible to recreate reality based on algorithms that simulate changes over time exactly.

Gilbert (1995:232-233) proclaims that the scientific approach to disaster and risk is in many instances a reflection of the "market" in which disaster research became an institutional demand. The historical disaster (and risk) studies literature tended to focus on "how the rich nations feel" (Sachs, 1990:26) and did not necessarily address the social, economic, and political realities in poorer countries most affected by disasters (and from recent events in the developing world it is clear that not much has changed). The natural sciences were, however, the first to address issues of probability

and risk based on quantifiable hazard variables. Moreover the focus on risk (as apposed to disaster) as a social phenomenon became evident during the latter part of the 1970s. In the 1980s a global realisation developed that disaster is not so much the size of the physical event but the inability of the stricken community to absorb the impact within its proper set of constraints and capacities (Lechat, 1990:2; Lavell, 1999). This realisation highlighted the need towards a risk, rather than disaster focus in disaster studies and research.

The modern-day study of disaster risk relates closely to the first understanding and investigation of disaster, both within a social and natural/physical science perspective, as explained above. Cardona (2003:2), Kelman (2003:6-8) as well as Smith (2002:49-52) identify two schools of thought that have developed in terms of disaster risk since the 1980s. Cardona refers to these as the constructivist and objectivist or realist schools of thought. Smith's interpretation is that of behavioural and structural paradigms. Kelman simply refers to the social scientist and physical scientist's focus on risk. After assessing the work of the three authors it became clear that for all means and purposes the constructivist school of Cardona, the behavioural paradigm of Smith and the social scientist focus by Kelman refer to the same approach in the investigation of disaster, so too the objectivist, structural and physical scientist paradigms. The work of Cardona will be used to differentiate between these two aspects (Note: These two schools of thought below should not be confused with the central argument of DRM vs. DM. The schools of thought discussed below refer to the focus on and study of disaster risk only).

Constructivist thinking relates to social sciences where risk is viewed as a social construct (similar to the earlier disaster focus). This approach requires an understanding of social representations and perceptions, and the interaction between different social actors and phenomena. A consciousness developed that it is conditions of risk, and the attitudes to risk, rooted in societies that inevitably lead to disasters. These conditions and attitude to risk in Less Developed Countries (LDCs) are greatly dependant on the economic conditions present in a country. Such conditions necessarily force vulnerable societies (e.g. the poor) to accept the risks which they face, whereas rich societies

can choose to avoid such risks. On the other hand, the objectivist or realist school finds itself more within the natural and physical sciences. Within this school of thought it is believed that risk can be quantified and objectively judged. As with the earlier emphasis on the quantification of disaster, so the accent within the natural and physical science remained on the quantification of risk. This estimation of risk also translated to the economic and actuarial sciences that believe that risk can be determined through mathematical formulae. Hewitt (in Quarantelli, 1998:76), a geohazard scientist, acknowledges that the social understanding of disaster is much more crucial to the contemporary disaster risk scene.

It would be unjust to assume that both of the mentioned schools of thought or paradigms enjoyed equal status within the international arena. Hewitt (in Quarantelli, 1998:77-78) says that the pure focus on the social construct of disaster risk by the constructivists ignores the hazard or "agent-specific" approach. This approach remained the most common visualisation of disasters, even in the work of social scientists within the 1980s. The truth to this statement is evident in the objectives of the International Decade for Natural Disaster Reduction (IDNDR - 1990-1999). Both of these schools of thought have made the paradigm shift from a pure disaster oriented focus to that of disaster risk. The contemporary understanding of risk has greatly increased to the extent that various scholars from a variety of different disciplines (e.g. sociology, anthropology, geography, architecture, agriculture, meteorology, engineering, law, public administration and development studies) are jointly researching issues of disaster risk (Comfort et al, 1999; Vogel, 1999).

The question still remains: what is the big difference between DRM and DM. The following section aims to address this.

DRM vs DM

In order to gain a better understanding of disaster management and disaster risk management, the interrelatedness between them should be examined. The subject of disaster and risk reduction draws its relevance from earlier contributions and previous practices in the disaster management fields, where traditionally the focus has been on preparedness for response. Before proceeding further though, it is

important to establish a common understanding of the basic tenets of disaster risk reduction and disaster risk management.

Disaster risk reduction emphasises a new global thinking in the management of disasters and disaster risk. Disaster risk reduction can be seen as the systematic development and application of policies, strategies and practices to minimise vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) adverse impact of hazards, within the broad context of sustainable development (ISDR, 2004). It is therefore clear from the above that DRR in the South African context can at the macro level be compared to the aims of our National Disaster Management Framework (NDMF).

The ISDR (2004:3) further defines DRM as "the systematic process of using administrative decisions, organisation, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards." In comparing the above two definitions it is therefore clear that DRM is the application of DRR. If we therefore agree that the NDMF aspires to the ideals of DRR, it would be valid to argue that DRM is what each and every disaster management centre, government entity and organ of state should do.

The question therefore still remains: "What is disaster management then?"

Disaster Management as defined by the UNDP (1992:21) is "the body of policy and administrative decisions and operational activities which pertain to the various stages of a disaster at all levels." Figure 1: The Disaster Management Cycle, depicts these various stages.

Disaster Management is defined by the Disaster Management Act 57 of 2002 as a continuous and integrated multi-sectoral, multidisciplinary process of planning, and implementation of measures, aimed at

- ◆ preventing or reducing the risk of disasters;
- ◆ mitigating the severity or consequences of disasters;
- ◆ emergency preparedness;

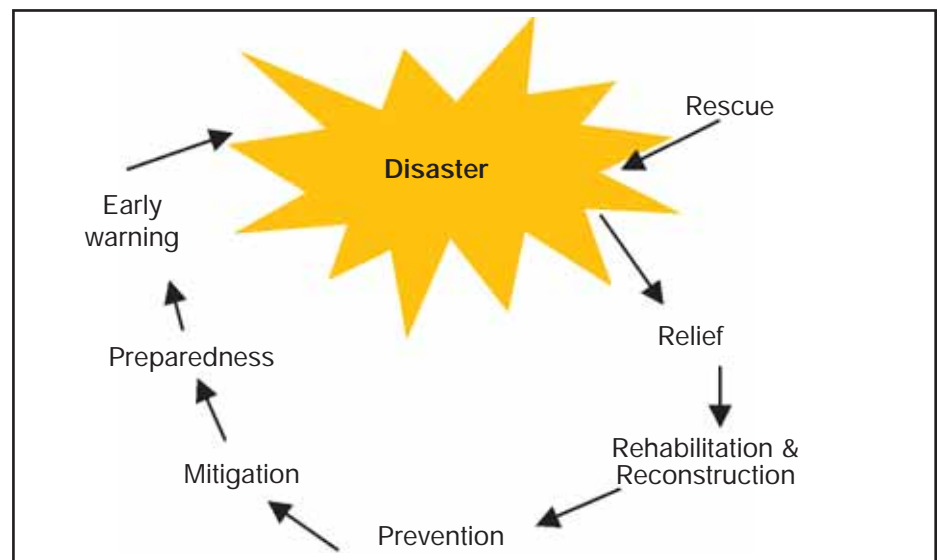


Figure 1: The Disaster Management Cycle
 A = Pre-disaster reduction phase
 B = Post-disaster recovery phase

- ◆ a rapid and effective response to disasters; and
- ◆ post-disaster recovery and rehabilitation.

Disaster management in its international form entails the integration of pre- and post-disaster activities in order to safeguard lives and property against possible disasters. At first glance, it seems as if disaster risk reduction forms an underlying tenant to disaster management in the definition supplied by the Disaster Management Act. Should this, however, have been the case in practise, then 15 years of disaster management in Africa should have yielded more results, less loss of live and livelihoods and less disasters.

One significant problem with the disaster management cycle was that it still has a disaster-oriented focus. This means that all activities and resources are geared towards a disastrous event. A focus on the underlying causes of these disasters (e.g. risk, hazards and vulnerability) is in most cases not considered, or it is the product of bureaucratic ignorance. Many disaster managers still choose to refer to the "causal factors of disasters" as espoused by the UNDP Disaster Management Training Programme 16 years ago. When one critically judges these "causal factors" it becomes evident that most of them can be ascribed to some form of vulnerability created by human activity. Another weakness in the application of the disaster management cycle is that a number of practitioners viewed the implementation of the cycle as a phased approach where the activities follow a sequential path. The

recognition that each of the cycle's processes is simultaneous did not materialise in most cases.

Through multiple efforts, the importance and uniqueness of hazard and risk reduction for the future have become evident. In contrast to the earlier concepts of disaster management, hazard and risk reduction practices relate to significantly larger professional constituencies, and depend on much more diverse information requirements.

While there is no doubt that emergency assistance and response will remain necessary, the potential consequences of increasingly severe hazards tell us that much greater investments need to be made to reduce the risk of social and economic hazards impacting on vulnerable conditions.

The challenge for disaster risk management (though a multi-pronged approach) in the coming years is to find effective means by which a much more comprehensive, and multi-sectoral, participation of professional disciplines and public interests can contribute to disaster risk reduction. Accomplishment of this goal requires both a political commitment, as much as public understanding to motivate local community involvement.

It is in no one's interest to continue to accept the rationale that the resources on which all societies depend must first be lost to hazards before their value is deemed worthy of protection, replacement, or repair.

Disaster reduction policies and measures need to be implemented, with a twofold aim: to enable societies to be resilient to hazards while ensuring that

development efforts do not increase vulnerability to these hazards.

Conclusion

In conclusion, is the above argument academic rhetoric or a practical reality? Some would probably agree to both. Should the first postulation be the case, then it would be safe to say that a number of international and regional organisations, as well as national government are spending considerable amounts of money on something that will not yield any benefits. In the case of the latter it would be much more beneficial for all disaster (risk) management practitioners to accept the reality that we are engaged in a complex and ever changing practice. What we have learned 10 years ago is not adequate to address a dynamic risk profile and ensure disaster risk reduction. It goes without saying that if we can manage the root cause of disasters, which is disaster risk, then disasters will not occur in the first place.

The focus on disaster risk management vs. disaster management is therefore not to facilitate a name change to an emerging discipline, but rather inculcate a realisation that disaster risk management required more practical and scientific input from a wide array of role-players than previously felt necessary. Disaster risk management therefore does not constrain the responsibility for disaster risk reduction to one government entity (which we now call the "disaster management centre"), but aims to tap into the vast knowledge and potential locked up in all other disciplines, using the "disaster management centre" as a vehicle and not a destination.

References

CARDONA, O.D. 2003. Indicators for Risk Measurement: Fundamentals for a methodological approach. Manizales - Colombia: Inter-American Development Bank.

CARR, L.J. 1932. Disasters and the sequence-pattern concept of social change. *American Journal of Sociology*. 38. pp207-218.

COMFORT, L., WISNER, B., CUTER, S., PULWARTY, R., HEWITT, K., OLIVER-SMITH, A., WIENER, J., FORDHAM, M., PEACOCK, W. & KRIMGOLD, F. 1999. Reframing disaster policy: The global evolution of vulnerable communities. [Web: <http://jishin.ucsur.pitt.edu/publications/Reframing.htm>]. Date of access: 30 August 2004

CUTTER, S.L. (Ed). 1994. *Environmental risk and hazards*. New Jersey: Prentice Hall.

DOUGHTY, P. 1971. From disaster to development. *Americas*. 23. pp23-35.

DRABEK, T.E. 1991. The evolution of emergency management. (in Drabek, T.E. and Hoetmer, G.J. (Eds), *Emergency Management: Principles and Practice for Local Government*, ICMA, Washington DC, pp. 3-29).

DRABEK, T.E. & QUARANTELLI, E.L. 1967. Scapegoats, villains and disasters. *Transaction*. 4. pp12-17.

DYNES, R. 1974. *Organisational behaviour in disaster*. Newark: Disaster Research Centre, University of Delaware.

DYNES, R. & QUARANTELLI, E.L. 1968. Redefining of property norms in community emergencies. *International Journal of Mass Emergencies and Disasters*. 3. pp100-112.

ELDENMAN, R. (1952). An approach to the study of disaster. (unpublished paper).

FRITZ, C. & WILLIAMS, H. 1957. The human being in disasters: a research perspective. *Annals*. 309. pp42-51.

GILBERT, C. 1995. Studying disasters: a review of the main conceptual tools. *International Journal of Mass Emergencies and Disasters*. 13. pp231-240.

GLANTZ, M. 1976. *The politics of natural disaster: The case of the Sahel drought*. New York: Praeger.

HEWITT, K. & BURTON, I. 1971. *The hazardousness of a place: a regional ecology of damaging events*. Toronto: University of Toronto University Press.

INTERNATIONAL STRATEGY FOR DISASTER REDUCTION (ISDR). 2004. *Living with risk: A global review of disaster reduction initiatives*. Geneva: ISDR Secretariat.

JAGER, W. 1977. *Katastrophe und gesellschaft: Gundlegungen und kritik von modellen der katastrophensoziologie*. Darmstadt: Luchterhand.

KREPS, G. 1973. *Decision making under conditions of uncertainty: Civil disturbance and organizational change in urban police and fire departments*. Newark: Disaster Research Centre, University of Delaware.

LAVELL, A. 1999. *The Impact of Disasters on Development Gains: Clarity or Controversy*. IDNDR Programme Forum., 5-9 July. Geneva, Switzerland.

LECHAT, M.F. 1990. *The International Decade for Natural Disaster Reduction: Background and Objectives*. *Disasters*. 14. 1. 1-6.

MILETI, D., DRABEK, T., & HAAS, J. 1975. *Human systems and extreme environments*. Boulder: Institute of Behavioral Science, University of Colorado.

MOORE, H. 1956. Towards a theory of disaster. *American Sociological Review*. 21. pp734-737.

O'KEEFE, P., WESTGATE, K.N. & WISNER, B. 1976. Taking the Naturalness out of Disasters. *Nature*. 260. April 15.

POWEL L, J., RAYNER, R. & FINESINGER, J. 1952. Response to disaster in American cultural groups. *Symposium on Stress*. Washington D.C: Army Medical Services Graduate School.

QUARANTELLI, E.L. (Ed). 1998. *What is a disaster?: Perspectives on the question*. London: Routledge.

QUARANTELLI, E.L. 1957. The behaviour of panic participants. *Sociology and Social Research*. 41. pp187-194.

QUARANTELLI, E.L. 1954. The nature and conditions of panic. *American Journal of Sociology*. 60. pp267-275.

SACHS, W. 1990. *Development. The Development Dictionary*. London: Zed Books.

SMITH, K. 2002. *Environmental Hazards: Assessing risk and reducing disaster*. 3rd Edition. London: Routledge.

SOROKIN, P. A. 1942. *Man and society in calamity: The effects of war, revolution, famine, pestilence upon human mind*. New York: Dutton.

TORRY, W. 1978. Natural disasters, social structures and changes in traditional societies. *Journal of Asian and African Studies*. 13. pp167-183.

TURNER, B. 1978. *Man-made disasters*. London: Wykeham.

UNITED NATIONAL DEVELOPMENT PROGRAMME (UNDP). 1992. *An overview of disaster management*. Geneva: UNDP-DMTP.

VOGEL, C.H. 1999. *Living with risk and disaster in South Africa*. (unpublished paper).

WESTGATE, K.N. & O'KEEFE, P. 1976. *Some definitions of disaster*. Bradford: Disaster Research Institute: University of Bradford.

The Western Cape Provincial Government's study tour to Cuba

16 - 28 March 2007



DR ELMIEN STEYN
PROVINCIAL DISASTER
MANAGEMENT CENTRE:
WESTERN CAPE



Dr Elmien Steyn from the Provincial Disaster Management Centre (PDMC) was part of a delegation of the provincial Department of Local Government and Housing in the Western Cape that visited Cuba between 16 and 28 March 2007. The delegation, led by Minister Dyantyi, visited the Republic of Cuba with the following objectives in mind:

- ◆ To build and augment the relationship between the Western Cape and Cuba;
- ◆ To technically review and evaluate housing construction and techniques, in order to draw lessons for the South African context;
- ◆ To explore and identify potential skills which can be used to broaden the scope and focus areas of a potential extension of the South African / Cuban support programme;
- ◆ To explore Cuba's success in the development of scarce skills and their training of artisans and labourers;
- ◆ *To investigate their successes in terms of the implementation of disaster prevention and management*; and
- ◆ To investigate Cuba's national programme focusing on the development of their youth.

However, the focus of this article will only be on disaster management. Cuba's success in ensuring public involvement and response in times of disaster management, the development of disaster management processes, mitigation measures and plans, etc. is commendable, providing much guidance to response to disaster management in a South African context. The strength of the rapid reaction time of the Cuban people rests on disaster management being a culture in Cuba.

The Cuban President is also the Chief of Civil Defence and the Chief of Staff in the Ministry of Civil Defence is responsible

for the overall co-ordination together with all the other ministries, provincial and local governments, communities, social institutions, trade unions, Cuban federation and student organisations, etc. The deployment of social workers is also decisive during and after a disaster, as well as the role played during the energy revolution in order to save fuel, electricity, etc.

Legislative and structural frameworks are also in place to involve the whole population.

The fall of communism in the Soviet Union in 1989 resulted in the economic and infrastructure decay in Cuba. Up to **3% of the total amount of investments** (national and international) made in Cuba on an annual basis, is allocated towards the **reduction of disasters** (new constructions to be made). If not used totally, the funds will be utilised in other parts of the defence force. Furthermore, a budget of **500 million Cuban pesos** per annum is set aside by the state for disaster recover purposes.

Civil defence in Cuba is based on the **continuous interaction** between the Chief of Staff in the Ministry of Civil Defence and the various defence councils on national, provincial and local level and the whole population. In general, there is a very good response from the population. In the case of a disaster, the affected community will be relocated to a safe facility in a nearby area or will be hosted with relatives. Food supply or support needed, will be provided by the State.

Civil defence also forms part of the **school curriculum** (for example: hurricanes, floods, fires, awareness campaigns on tropical diseases, inspection of houses, etc) and through this, everyone accepts responsibility for their own life.

During a disaster the State will be responsible for the distribution of resources to priority areas. The main role of the State is to provide material for

reconstruction, whilst the population will assist disaster affected families to restore their houses.

A two-day exercise, **Meteoro**, by civil defence during the third weekend of May is held every year. This exercise takes place the month before the hurricane season (1 June to 30 November) starts. The first day (Saturday) involves the executive of the State, whilst the second day (Sunday) the involvement of the whole population is important. The focus of this exercise depends on the specific disaster prone area, for example hurricanes, earthquakes, etc.

Housing Process (PHP) and future volunteer programme;

- ◆ The Western Cape PDMC (Provincial Disaster Management Centre) will continue to enhance the **disaster management curriculum** through the proposed agreement with the United Nation's University and various Universities within the Western Cape. Furthermore, the Western Cape PDMC will also finalise the establishment of a resource center at the Provincial Emergency Management Centre;
- ◆ The Western Cape PDMC will

explore the best practice examples of the Cuban "**Energy Revolution**" with the Western Cape's Energy Strategy (conservation of the usage of energy) with Eskom and the City of Cape Town;

- ◆ The Western Cape PDMC will explore the possibility of a presentation by the Cuban Department of Civil Defense on "civil protection" during the annual **Disaster Management Institute of Southern Africa (DMISA, Western Cape) seminar or workshop**; and
- ◆ The Western Cape PDMC requested UNECA ("Unión de Empresas Constructoras del Caribe") to provide the Centre with a **video on the annual two-day Meteoro Civil Protection exercise** to be held in May 2007.



Civil Protection Conference at UNECA's head office

In hindsight, Dr Steyn has observed, that in Cuba, the management of disasters is an important part of their daily lives. The Government has taken full responsibility for the recovery process however it is not easy to compare the South African context with that of Cuba, due to the different government systems utilised by the two countries (democratic versus socialist system).

Dr Steyn reported that we could learn some lessons from the Cubans and therefore the following recommendations were made:

- ◆ The Provincial Government of the Western Cape (PGWC) will make use of the 10 pilot **Training, Education, Awareness and Marketing (TEAM) Programme** areas to re-enforce the People's



Housing project using local materials (limestone quarry) in hurricane affected areas in the Matanza province.

Getting to know the President:

Pat Adams



BY JOHANN MINNIE
DMISA Exco
MARKETING &
WEBSITE MANAGEMENT

Pat Adams was elected as the President of the Disaster Management Institute of Southern Africa (DMISA) at a special Council meeting of DMISA in Hartenbos on 12 September 2006. In this profile of the newly elected President, Johan Minnie shares some of the interesting facts he discovered when interviewing and visiting the leader of the Institute.

The first thing I remember about Pat Adams is the day back in 1998, when as a rookie I was taken to meet Pat in his office at former Oostenberg Municipality. I was afraid of wasting his time, and that he might be irritated or at least brusque. Not even the friendly secretary could soothe my apprehension as my colleague marched me past her into Pat's imposing office with no preceding formalities. I was pleasantly surprised by a friendly, warm welcome. I immediately appreciated Pat Adams as a manager who takes a real interest in other people and really cares for others.

Patrick Adams was born and raised in Athlone, Cape Town. He is married to Elaine with three children, Julia, Eoin and Nicole, and a darling granddaughter Nadine. He has a strong Christian upbringing and is dedicated to contributing to the changes of our times. He enjoys walking with his wife and likes to read autobiographies of sports personalities and politicians.

Pat started his public sector career as Civil Defence Officer for the then Western Cape Regional Services Council in 1989, after spending 12 years in the textile industry.

I spoke to Pat in his office in Goodwood and enquired what inspired him to work in local government. "When I joined local government in 1989, I had visions of serving the community. Coming from a previously disadvantaged background, I felt passionate about making a contribution to public life", he said. Speaking to other people who worked with Pat, they tell me

that Pat has always been very good at getting community involvement in his projects. His volunteer corps was an example for others, and he always succeeded in getting community leaders and politicians on board with his initiatives.

Pat became Director of Protection Services of Oostenberg Municipality in 1997 and in 1999 moved to Alberton to become the Head of Public Safety. Following the establishment of Ekurhuleni Metropolitan Municipality, he became the Interim Head of Public Safety and Acting Chief of Police before taking up the positions of Director of the Disaster Management Centre and Acting Executive Director of Public Safety.

During his years in Gauteng, a highlight of Pat's career was his appointment to the Section 14(5) Committee on Public Safety in the East Rand, which was confirmed by the MEC for Development Planning and Local Government of the Gauteng Province. This committee's main responsibility was to implement the transformation of Local Government service delivery priorities in terms of the Structures Act pertaining to local governance in South Africa.

Pat was also appointed by the Section 14(5) Public Safety subcommittee as the transformation convener responsible for the portfolio of Disaster Management and Communications/107 Centres for the East Rand.

A further highlight was his appointment by SALGA as convener of the Disaster Management and Communications Technical Task Team.

After 6 years in Gauteng, Pat returned to his roots when he was appointed in January 2006 as Director: City Emergency Services of the City of Cape Town.

During a visit to Pat's home, I enquired about the graduation photos in the entrance-hall. Pat obtained, amongst other qualifications, his diploma in Management Studies and Masters Degree in Business Administration (MBA) from the Business School Netherlands International, and is presently doing his doctorate in Business

Relaxing together in Hartenbos during Conference 2007 are Pat Adams (President - Western Cape Region), Ms Maliga Reddy (Deputy President - Kwazulu-Natal Region), Mr Peter Mokoto (Immediate Past President - Magaliesberg Region)



Administration (DBA) through the same institution, with the research topic "Disaster prevention and mitigation: Critical components towards sustainable development".

He enjoys the satisfaction of learning, and has a strong desire to contribute, enhance and broaden the general body of knowledge as well as his own knowledge and skills. He has a pensive expression filled with memories when he relates how his academic achievements have come with "blood, sweat and tears" and he gratefully acknowledges the undivided support of his wife and children during this time.

At Pat's home I saw an impressive action-photo of a soccer player in mid-air, towering above his opponents, heading a goal. With my only interaction with Pat being on a work level, I was surprised to discover this new aspect about him. Pat, as a keen sportsman, boasts outstanding sporting attributes. He was a member of Aurora Football Club since 1968 and represented Western Province and the South African 11 soccer teams on several occasions and played professional soccer for a short while until injuries prematurely ended his soccer career. He also played cricket and held several records in athletics.

Paging through his scrapbook of achievements over the past years, I soon discover that there is more to Pat than meets the eye. He has been actively involved in a range of projects and campaigns contributing to community upliftment and empowerment.

As Deputy Returning Officer and Ward Manager for the previous Oostenberg Municipality and Alberton

Town Council respectively, he served on the Election Coordinating Management Team.

During June 1995, Pat went on a research trip through 12 States of the United States of America, and interviewed many Disaster Management and Fire and Rescue functionaries. He was also privileged to be selected for training and empowerment by the Israeli Centre for International Cooperation and Socio-Political Options in 1996. During November and December of the same year, he attended a course at Beit Berl University-College in Israel, on Community Development, Leadership and Nation Building.

In August 2000, he attended a Conference of the Institute for Traffic Engineers (ITE) in Nashville, Tennessee, United States of America. In September of 2000, he visited Robot Foto Und Electronic GMBH (Traffic Safety Systems) in Dusseldorf, Germany. In September 2003, he was nominated to be part of a delegation selected by National Government to attend a Disaster Management Conference and Exhibition in Paris, France. In June and September 2005, he was part of two fact-finding delegations to Germany for the 2006 FIFA World Cup.

Pat is a recognised leader in more than one professional body. He enjoys membership of several professional bodies, inter alia as Associate Member of the Institute of Licensing Officials of Southern Africa (ILO), Honorary Member of the Institute of Traffic and Municipal Police Officers of Southern Africa (ITMPO) and member of the Institute for Municipal Law

Enforcement of Southern Africa (IMLE), of which he served a two year term as President from 2001 to 2003. He is also a Fellow of the Disaster Management Institute of Southern Africa (DMISA).

Pat joined DMISA back in 1992. He was elected to the National Council of DMISA in 1998 and currently serves as President for the term 2006 to 2008. He has served on the Executive Committee since 1990. He also served on the Southern Gauteng Regional Committee for 6 years of which he was Chairperson for two terms from 2002 to 2005.

Pat, as President of DMISA, has set out three focus areas for his term of office:

- ◆ The incorporation of Disaster Management into the Integrated Development Plan (IDP) of municipalities
- ◆ Disaster Management Capacity
- ◆ Resilient communities

My observation of Pat in conversations with other people, is that he is always ready to recognise achievements and pay compliments where they are due, and when he put the phone down after a conversation with his wife I could see the appreciation he has in the way she supports him. He is sincere in his approach; his quiet and polite manner ensures great relations with his colleagues and he believes in maintaining a transparent, democratic and participative management style.

To Pat, the secret to success, is "to have a balance in one's family/social, spiritual and professional life". He is a firm believer that people - all people - are important. "Everyone needs to be treated the same".

"God has given me a gift of not having tunnel vision and by seeing the bigger picture I hope that I can teach people that they are all worthy and important, from the cleaner right through to the top".

"I am humbled and very thankful to be in a position in life where I can be a mentor to people".

In DMISA activities and at work, one can clearly see that Pat is passionate about Disaster Management and the people who practice it - and that is what really matters when you are the President of the Disaster Management Institute of Southern Africa.

Disaster Risk Assessment at municipal level in South Africa:

The need for a multi disciplinary approach



A. J. JORDAAN

Introduction

"The revolutionary idea that defines the boundary between modern times and the past is the mastery of risk: the notion that the future is more than an act of the gods and that men and women are not passive before nature" -Peter L. Bernstein, *Against the Gods: The Remarkable Story of Risk*

Scientific risk identification and analysis is crucial in order to provide accurate information for policy-making, risk prioritisation and the development of a reliable disaster risk index (DRI). The second Key Performance Area (KPA) in the South African National Disaster Management Framework is risk assessment with the following main objective: *"establish a uniform approach to assessing and monitoring disaster risks that will inform disaster risk management planning and disaster risk reduction undertaken by organs of state and other role players"*. The establishment of a uniform approach is also key to the development of a disaster risk index for South Africa.

Theoretical background: The Pressure and Release Model and Community Resilience

The theoretical discussion in this section only focuses on the pressure and release model (also referred to as the crunch model) and on community resilience as an integral part of vulnerability. Wisner, et al (2006) argues that disasters are the interaction of hazards and vulnerable situations. They also argue that risk of a disaster is the compounded function of a natural hazard and the number of people, characterised by their varying degrees of vulnerability to that specific hazard, who occupy the space and time of exposure to the hazard event. Understanding the elements of risk is a

prerequisite for the correct assessment of disaster risks. Probably the most confusing element is vulnerability. Vulnerability is a term that is applied to many different circumstances and often used improperly. Blaikie and Sadeque (2000) described vulnerability as *"the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard. It involves a combination of factors that determine the degree to which someone's life and livelihood is put at risk by a discrete and identifiable event in nature or in society"*. Vulnerability has two components: exposure to hazard (eg. fires, droughts, floods) and difficulty (lack of resources) to cope with, and recover from them. The two components reflect (IFRC, 1996) 1) an external side of risks, shocks and stress to which a structure, individual, household, community or nation is subject, and 2) an internal side of lack of resources to cope without damaging loss

Alexander (2000) distinguished between risk and vulnerability by stating that vulnerability refers to potential for loss or disruption and risk refers to the probable level of loss as a result of a specific hazard. Wisner et al (2006) explained the relationship between risk, vulnerability and hazards by means of the pressure and release model (PAR). The basis for the PAR model is that a disaster is the intersection of two opposing forces; vulnerability on the one side and hazards on the other. (See Figure 1).

Wisner et al (2006) also proposes the reversal of the PAR model as a way to provide security instead of risk. They propose that vulnerable people's access to resources can be improved, and changes in power relations can be made. The out-

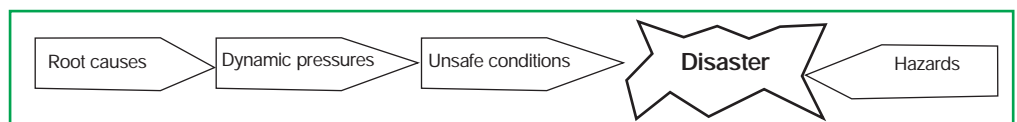


Figure 1: Pressure and Release Model for Disasters (Wisner, et al. 2006)

come after reversal of the model is a safe environment. The social economic and political mechanisms (dynamic pressures) that translate root causes into unsafe conditions can sometimes be blocked. Inefficient and corrupt municipal structures are examples of dynamic pressures conducive to unsafe conditions. Reversal of the "hazard side" of the model is possible in some instances. This will also reduce risk. The ideal situation is a release of pressure from unsafe conditions (vulnerability) as well as hazards which then creates a controlled and safer environment.

Resilient communities are those that "takes intentional action to enhance the personal and collective capacity of its citizens and institutions to respond to and influence the course of social and economic change" (Making Waves, 2002). Strong leadership is needed to plan and facilitate such action. The role of government is merely to create an institutional framework for citizens to organise and to support communities as far as possible by means of training and the supply of infrastructure where needed. Determining the level of community resilience should form part of the vulnerability analysis and it can be done taking into consideration; 1) people, 2) organisations, 3) resources, and 4) community processes (Community Resilience Training Model 2000): It is clear from the literature that the level of resilience in a community depends on many interrelated factors. Vulnerability or resilience assessments therefore are essential to determine risk.

Calculation of Disaster Risk

The UNDP, (2004) define risk as "the probability of harmful consequences, or expected loss of lives, people injured, property, livelihoods, economic activity disrupted (or environment damaged) resulting from interactions between natural or human induced hazards and vulnerable conditions". The UNDP and most literature express risk by the equation: **Risk = Hazard X Vulnerability**. [R=(HXV)] (Wisner, et al, 2006; von Kotze and Hollaway, 1999). Heijmans & Victoria, (2001); ISDR, (2000) adds manageability or capacity to the equation and propose: **Risk = (Hazard X Vulnerability) / Manageability or Capacity** [R = (HxV)/C]. The Asian Disaster Reduction Centre argues that Risk is

the sum of probability of loss and total loss: **Risk = (Probability of loss) X Loss**. Morimiya (1992) define risk as the extent of variance between an unwished state and the current normal one, which is observed as a potential gap. When it is applied to disasters, the variance is identical to the estimated damage to the present properties of society. Van Weston, (2005) refers to risk as: **Risk = ?[Hazard X Vulnerability X Amount]**

The most commonly used formula in disaster risk assessments at municipal level in South Africa is the equation **R = (HXV)/C**. The PAR model supports this equation in that it considers the interaction of hazards and vulnerable situations. However, it does not clearly differentiate between the capacity to deal with hazards on one side and vulnerabilities on the other. The danger in the current formula is that developers mostly focus on the hazards without adequate attention to the unsafe conditions and root causes thereof or vica versa.

The equation currently in use equates the manageability to deal with vulnerable situations as well as hazards. This is in fact not the case since the capacity or manageability to deal with vulnerable or unsafe conditions is totally different from the capacity to decrease the probability and intensity of a hazard. In order to simplify cost benefit analysis and planning, an equation where disaster risk assessors differentiate between the capacity to decrease vulnerable situations and the capacity to influence the probability and intensity of hazards is proposed. Such an equation could be as follows:

$$R_k = \sum_{ij} [(H_j/C_{1j}) \times (V_i/C_{2i})]$$

Where:

R = Disaster Risk for disaster k

H = Probability of hazard j with a certain magnitude

C₁ = Capacity or factors that impact on probability and impact or magnitude of hazard j

V = Vulnerable situation at specific time and space i

C₂ = Capacity to influence vulnerable situation i

The literature emphasised that vulnerability stands in relation to a specific hazard in time and space (Wisner, et al, 2006), thereby implying that activities that reduce or increase the impact on hazards also have a similar effect on the vulnerable situation. The reality at municipal level is that the capacity to deal with hazards and vulnerable situations are located in different sections or departments. Capacity that deals with hazards seldom deals directly with people or the community whereas capacity influencing vulnerable situations almost always deals with people or communities. Mathematically it is simpler and easier to understand if one differentiates between the capacity to reduce the impact and frequency of the hazard (C₁) and the capacity to reduce vulnerability or increase resilience (C₂). It is also easier to build variables such as the effect of drought on floods into the model for example; heavy rains following a dry period will have an increase in off flow of water therefore increasing the value of hazard (H). It is simple to construct a factor into C₂ to determine the effect of the increased water flow on the total risk factor. This differentiation should also increase decision-making that is based on quantifiable data. The proposed formula should assist development planners to increase the accuracy of cost benefit analysis for risk reduction planning.

Municipal Disaster Risk Assessments: Conclusions and recommendations

Disaster Risk Assessments from five municipalities were analysed and it became clear that the methodology followed by consultants has basically the same elements namely hazard, vulnerability and capacity. Of concern though, is the weighting of disaster risk factors that are not quantifiable, the lack of scientific based vulnerability assessments. All reviewed disaster risk assessments for instance ignore the importance of community resilience as a critical element in the vulnerability calculation. Most assessments follow the traditional way of looking at disasters by emphasising and quantifying the hazards instead of focusing and quantifying the vulnerable situations caused by dynamic pressures such as inter alia poverty, improper development planning, corruption, etc.

The differentiation of focus in disas-

ter risk analysis is closely coupled to the specialist profession of the consultants who execute the assessment. Scientists with a sociological background tend to focus more on community vulnerabilities whereas engineers and environmental specialists have a greater focus on hazards and structural and environmental vulnerabilities. This is of great concern since accurate disaster risk assessments need to involve all disciplines. Inputs from engineers, sociologists, meteorologists, environmentalists, economists and others are equally important. An analysis of risk assessment teams currently doing disaster risk assessments in South Africa shows that the expertise to address all the issues necessary for scientific DRA is not included in the assessment teams. The expertise is available in the country but consultants don't make sufficient use of available expertise; probably because of the cost of contracting other experts or the lack of clear Terms of References (TOR) from municipalities.

Hazard risk assessment is in most cases easier, more quantifiable and affordable than vulnerability assessment. Most vulnerability assessments deal with people and communities and therefore the need for more qualitative research and data. Special social skills and knowledge are needed to work in communities in order to obtain this data and most consultants doing disaster risk assessment are from an engineering or related professional background. Working in communities is also time-consuming and very costly. A vital error in most risk assessments is the absence of a participatory vulnerability analysis and the lack of any reference to community resilience.

As a justification for not including all aspects of community vulnerability assessments, consultants mentioned that municipalities in South Africa are more price conscious than quality conscious in their endeavour to obtain disaster risk assessment plans. Consultants make the allegation that by including a proper process of vulnerability assessment (which includes resilience assessment), they out-price themselves from the tendering process. The only solution to this problem is that municipalities or agencies should be more specific in their TORs; they must specify the type and detail of information needed and probably even

the methodology for risk calculation.

DRA provides the basis for risk reduction planning, preparedness planning and response and recovery planning. The Disaster Management Act (Act 57 of 2002) as well as the National Disaster Management Framework clearly specifies the need for accurate DRA at all levels and within all departments. The need for scientific based DRA that are comparable between regions, metropolises and district municipalities is imperative for the development of development strategies and plans. The development of a reliable DRI depends on accurate and comparable DRAs; therefore the need for a common methodology to compute disaster risks. Why doing the job half now instead of completing it to its full consequences? The answer to this question is without doubt to be found in the ignorance at municipalities regarding the importance of disaster management. This results in inadequate funding for risk assessment.

In order to increase the quality of disaster risk assessments that contributes towards the development of a reliable Disaster Risk Index (DRI) for South Africa (and SADC), the following should be addressed:

- ◆ Government departments, provinces, metropolises and district municipalities responsible for disaster risk assessments should realise that proper assessment is costly and they should budget adequately for that
- ◆ Government departments, provinces, metropolises and district municipalities should provide detailed TORs in order to ensure that all consultants tender for the same deliverables using the similar methodologies
- ◆ A common methodology for disaster risk assessment should be developed and used in order to compare different risk assessments with each other
- ◆ More research is needed to refine disaster risk assessments
- ◆ Consultants executing disaster risk assessments should include experts in their assessment teams to ensure unbiased risk assessments
- ◆ More emphasis should be placed on the assessment of vulnerable situations; this includes inter alia:

- Participatory vulnerability assessment
- Community resilience
- Dynamic pressures leading up to vulnerable situations
- Identification of root causes

Disaster Risk Assessment has an impact on peoples' lives and has the objective of disaster risk reduction. The slogan "*Disaster management is everybody's business*" is very true but also true is that not everybody can effect DRA. This is the task of a multi-disciplinary team of specialists who also understand the importance of participatory vulnerability assessment and local knowledge.

References

- Alexander, D., 2000. *Confronting Catastrophe: New Perspectives on Natural Disasters*, New York. Oxford University Press.
- Blaikie, P. and Sadeque, Z. 2000. *Policy in Hoigh Places. Environment and Development in the Himalayas*. Kathmandu, Nepal: International Centre for Integrated Mountain Development.
- DFID Bangladesh. 2003. *Poverty, Disasters and the Environment in Bangladesh: A Quantitative and Qualitative Assessment of Causal Linkages*. Kelly, C. and Khan Chowdhury, M. H., Helen Keller International Bangladesh.
- IFRC, 1996. *Vulnerability and Capacity Assessment Toolbox*.
- Kaji, H., *The Successful Experience in Disaster Risk Management in Japan: Focus on Earthquake Disaster*. Regional Workshop on Disaster Risk Management. Faculty of Policy Management, Keio University, Japan
- Morimiya, Y., *What is Risk?*, Yobojiho, Japan Association of Fire and Marine Insurance, No. 168, 1992
- UNDP, 2004. *Reducing Disaster Risk: A Challenge for Development*. Bureau for Crisis Prevention and Recovery, S. Swift Co. New York.
- Wisner, B., Blaikie, P., Cannon, T. and Davis, I. 2006. *At Risk*, Second Edition. Routledge, London.

Disaster management training for politicians and officials on municipal level with the focus on the integrated development planning process



DR ELMIEN STEYN
PROVINCIAL DISASTER
MANAGEMENT CENTRE:
WESTERN CAPE

The Disaster Management Act (No 52 of 2002) and the Municipal Systems Act (No 32 of 2000) stipulates the inclusion of a disaster management plan into the municipality's integrated development plan (IDP). With the above legal requirement in mind, the Provincial Disaster Management Centre (PDMC) of the Western Cape embarked on disaster management / IDP training, which was targeted at municipal politicians and officials, involved in the field of disaster management. This training took place during February and March 2007 in the various districts and in the City of Cape Town.

This capacity building programme is part of a provincial wide strategy to ensure the implementation of the Disaster Management Act (Act 57 of 2002), as well as the National and draft Provincial Disaster Management Frameworks and the draft National Guidelines.

This training was aimed at firstly preventing confusion that does exist amongst the different spheres of government and

secondly to ensure that disaster management is included and budgeted for through the Municipal Integrated Development Plan. The training was conducted over a period of five weeks in the form of decentralised three-day courses, which were held at the various District Municipalities and the City of Cape Town. The first day of the training programme was targeted at all disaster management stakeholders including the executive mayors, councillors as well as municipal managers and top, senior and middle management. The second and third days were targeted at disaster management practitioners, IDP managers as well as officials, for a more practical approach to the implementation and inclusion of the Disaster Management plan as part of the Integrated Development Plan. Municipalities were advised to nominate key officials i.e., engineers, town planners, financial and housing officials as well as health care practitioners.





One of the Disaster management/IDP training sessions in Central Karoo district municipal area, Beaufort West

The Provincial Disaster Management Centre is responsible to capacitate and support the Local Disaster Management Centres in their task to prevent or reduce the risk of disasters by way of increasing the capacity of officials and political decision makers in order to minimise the

risk and impact of disasters. The current level of training and education interventions for municipal officials and politicians does not always include the vital aspect of disaster management, which in essence needs to form an integral part of each and every Municipal Integrated Development

Plan as well as their budget. Too much emphasis is still being put on Disaster Management to handle or remedy the effects of a disaster whereas all departments within municipalities i.e. housing, health, finance etc. actually need to take responsibility for issues relating to their line function, bearing in mind that disaster management is everybody's business and that all departments are responsible for their own distinct disaster management planning and budgeting.

The training programme focused on the following objectives:

- ◆ Provide training to officials and councillors in disaster management;
- ◆ Capacitate district and local municipal officials and politicians in the development of disaster management plans;
- ◆ Equip officials with knowledge and skills required to comply with the implementation of the Disaster Management Act (Act 57 of 2002) as well as the draft Provincial Disaster Management Framework;
- ◆ Promote awareness of the implication of disaster management planning on both operational and capital budgets;
- ◆ Introduce a capacity building initiative, which will enhance a coaching / mentorship approach to enable and equip officials to train their counterparts/ sub-ordinates;
- ◆ Provide training that takes cognisance and provides guidance in terms of the development of the Disaster Management sectoral plan as a requirement of the Integrated Development Plans of Municipalities;
- ◆ Training also emphasised the critical role disaster management is to play in development planning; and
- ◆ Bring about awareness and training about disaster recovery as well as the relationship evident between disaster recovery and disaster mitigation.

The above training programme was executed with the support and ownership of all relevant line departments within the various local and district municipalities, as well as the City of Cape Town. A total of 700 people attended the training.

Using satellite imagery, remote sensing and geographic information systems for South African disaster management

"Nations have passed away and left no traces, Any history gives the naked cause of it - one simple reason in all cases; they fell because their people were not fit."

Rudyard Kipling



Disaster management throughout the world has become a discipline unto itself as people worldwide attempt to gain greater control over their circumstances. Everyday risks if not identified and quantified stand to become disastrous and the identification and assessment of risk in order to reduce the probability of disaster has become an important challenge in disaster management.

The South African Disaster Management Act No. 57 of 2002 calls for *"significantly strengthened capacity to track, collate, monitor and disseminate information on phenomena and activities..."* Furthermore, the Act states that *"A key to having good information systems is to invest in mechanisms and capacity for surveillance, monitoring and evaluation."* (Disaster Management Act 57:2002)

With the Act providing guidelines, the South African National Disaster Management Centre (NDMC) has entered into an agreement with the Satellite Application Centre (SAC) to procure their sensor portfolio to assist and enhance the National Disaster Management Information System (NDMIS). The system relates to various aspects concerning hazard analysis, vulnerability assessment, contingency planning, reporting systems as well as early warning systems.

The Range of Sensors includes NOAA, LandSat 7, MODIS, and the SPOT Range amongst many including the new SPOT 5 Imagery that will provide a national coverage annually in a 2.5m resolution and be presented as a level three product (imagery is already orthorectified with ground control points and a DEM for terrain displacement corrections).

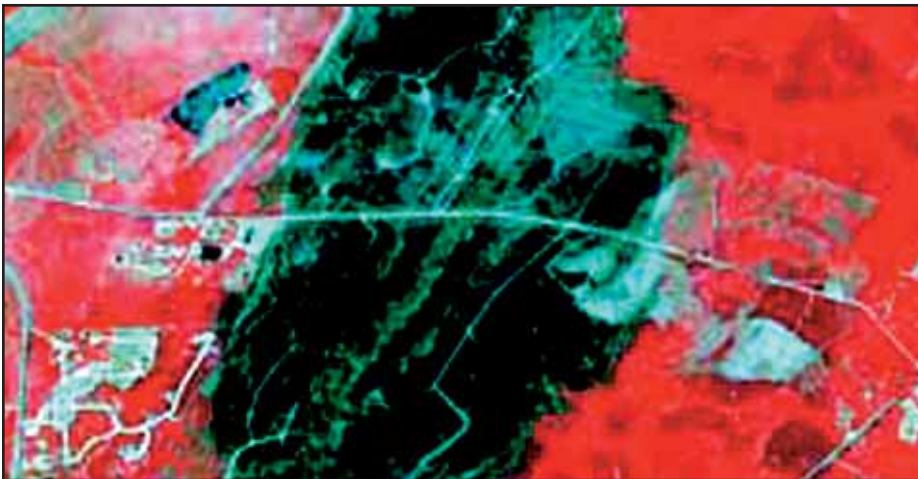
Furthermore, acquisition of Ikonos, Radarsat, and Quickbird high resolution imagery are part of the portfolio for priority areas and can be obtained on an ad hoc basis.

A host of applications can be derived from the interaction between satellite imagery, remote sensing techniques and intelligent GIS information. Feature extraction with remote sensing techniques will help to identify communities and assets at risk. The quantification of disasters will also be assisted by the identification of burn scars and extent of live fires, floods and storms.

Post disaster damage assessment techniques can be employed in relation to fires, floods, earthquakes and storms. Ad hoc requests over priority areas will enable change detection (before/after picture) of disaster stricken areas to enable analysts to quantify damage to the area. The monitoring of urban development as far as housing and infrastructure are concerned together with settlement data provide valuable information to decision makers to further disaster preparedness and to formulate response strategies.

The technology lends itself to the creation of current and accurate vegetation and land cover outputs at the micro level for environmental monitoring. Through the creation of seasonal NDVIs, drought, desertification and deforestation can be monitored.

Where weather related occurrences such as hurricanes are concerned, monitoring and tracking of storms coupled with modelling of paths and forecasts could add great value to early warning systems and assist communities in preparation for events.



Fire Damage Assessment - Georgia

False colour (infrared) IKONOS satellite imagery

Overview of fire extents.

Red = healthy vegetation/tree cover;

Green = burnt or burning areas.

Lastly it is important to note that a substantial amount of archived satellite imagery is available thereby enabling analysts to view temporal change of phenomena; be it human or environmental. Combining this information with historical events could shed light on reasons why certain events occurred in the past and assist with modelling of future events.

The procurement of this data source and its subsequent license agreement cascades down to the provincial and district municipal spheres as well as across national departments within the Department of Provincial and Local Government (DPLG). This means that the data will be made available to other national departments by the NDMC and enable a completely different range of derivatives as far as application development is concerned.

Furthermore, the data will also be shared amongst Provincial and District Municipal Disaster Management entities in order to empower decision makers, disaster managers and community leaders to better employ disaster management procedures and improve readiness.

Resources:

Disaster Management Act 57 of 2002.
Government Gazette, 15 January 2003.

Greene, R.W.2002

Confronting Catastrophe. A GIS handbook

ESRI Press, Redlands California.

ArcUser Online Magazine

<http://www.esri.com/news/arcuser/0702/remotesense1of3.html>

<http://www.esri.com/news/arcuser/1005/umbrella29.html>



Flood Damage - New Orleans: Identifying areas under water using satellite imagery, remote sensing and GIS

The establishment of a resource centre for the provincial disaster management centre in the Western Cape



DR ELMIEN STEYN
PROVINCIAL DISASTER
MANAGEMENT CENTRE:
WESTERN CAPE

During the Disaster Management Institute of Southern Africa's (DMISA) Western Cape Seminar held on 27 and 28 July 2006, the United Nations International Strategy for Disaster Reduction (UN/ISDR) Unit for Africa donated an Inter-Agency Field Library for Disaster Reduction. This initiative was designed to support hazard-prone countries by providing literature and practical, technical and educational information on disaster risk reduction and related subjects.

The library consists of a metal trunk filled with material intended to stimulate the engagement of disaster reduction practitioners, researchers, national, provincial and local leaders, regional institutions, libraries, NGOs, UN and other international agencies. The library is a tool that encourages learning and develops skills in disaster reduction. It is targeted to support leaders, disaster management officers and key educational institutions. The content of the library is designed according to the hazard, vulnerability and disaster history of each country. Guidelines for the use of the library were also provided in order to promote a culture of disaster prevention worldwide. The UN/ISDR secretariat will maintain regular contact with the Provincial Disaster Management Centre (PDMC) for regular exchanges of views and continued guidance and advice for the most effective

use of a resource centre at the PDMC, located at Tygerberg Hospital.

In order to keep the UN/ISDR and other donors (European Commission, Finland, Germany, Japan, Norway, Netherlands and Sweden, other international, regional organisations as well as experts and publishers) that provided information free of charge informed, the PDMC needed to develop the field library project further into a resource centre to enhance its impact.

The PDMC is obliged to execute certain powers and duties as prescribed by the Disaster Management Act, No 57 of 2002, which in this instance is prescribed in section 30 (c) that the PDMC must act as a repository of and conduit for information concerning disasters, impending disasters and disaster management in the province.

It is in this regard, the PDMC established a resource centre in order to accommodate the field library to promote and encourage disaster management related research. The PDMC is in the process of obtaining office equipment for the resource centre in order to conform with the Disaster Management Act and its responsibility to its clients, namely the municipalities, other national and provincial departments, CBOs, NGOs, etc.

Satellite Communications for Disaster Management

Umoya Networks specialises in the design, deployment and management of satellite networks specifically for disaster management related requirements.

Recent disasters such as the Asian Tsunami and Hurricane Katrina have highlighted the necessity for the establishment of technical supporting systems for disaster management. The faster the authorities respond, the lower will be the loss of life and property. The time to respond and the effectiveness of the response can be improved considerably by proven technology solutions. In the Western Cape the Department of Local Government and Housing, Disaster Management and the Fire Brigade Services have deployed Africon's GEMC³ system together with a satellite communications solution provided by Umoya Networks which facilitates effective preparation for, and response to, disasters.



Tsunami December 2004

A crucial part of any disaster management solution is reliable wide area communications. The Tsunami of December 2004 completely destroyed all terrestrial telecommunications infrastructure and thus satellite was the only means that could be used until such time as the damaged infrastructure was repaired.

Satellite Communications Provide

- ◆ Resilient Wide Area Networking where terrestrial based communications such as fibre optic, copper and cellular are often destroyed by natural disasters.
- ◆ Transmission of information from remote monitoring stations, either fixed or mobile.
- ◆ Delivery of alerts to the public.
- ◆ Crucial communication support to disaster response actions (first responders).
- ◆ Ability to bypass public networks which, if still functioning, usually become over-subscribed by heavy traffic volumes.
- ◆ Independent of terrestrial infrastructure. Satellite service can provide additional bandwidth-on a diverse path-to provide redundancy as well as overflow capability during peak usage periods.
- ◆ Scalability to meet sudden demands during the relief effort.
- ◆ Ubiquitous coverage. Satellites cover the entire surface of the earth.
- ◆ Instant infrastructure. Satellite service can be quickly provisioned in areas where there is no terrestrial infrastructure.
- ◆ Any mix of voice, data and video applications.
- ◆ Temporary networks. Satellite is the only practical, short-term solution for getting critical information into and out of an area.





Umoya Networks specialises in the design, implementation and management of satellite networks specifically for disaster management related requirements.

This can include all aspects of an IT deployment including project management, supply, installation and configuration of servers, pc's, networking and infrastructure.

Contact us on

Tel: 021 702 4848

Fax: 021 702 4849

Email address: peter@umoya.net

www.umoya.net

