

DISASTER MANAGEMENT

Official Journal: Disaster Management Institute of Southern Africa



Volume 2 No 2

The background of the cover is a photograph of a vast, cracked, and dry landscape, likely a dried-up lake or riverbed. The ground is covered in a dense network of dark, irregular cracks, creating a mosaic-like pattern. In the distance, there are low, rolling hills under a clear, bright blue sky. A large, bright sun is positioned in the upper left quadrant, creating a lens flare effect across the sky.

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DISASTER MANAGEMENT

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Bafana Mazibuko

Dear Reader

As a way of introducing myself to this platform, I would like to thank our official journal of the Disaster Management Institute of Southern Africa (DMISA) for providing the space to interact with the readers and all the disaster management functionaries in the country. It is an honour for me to assume this publication space after our esteemed immediate past-president, Dr Johan Minnie. It's also in order for me to acknowledge the excellent work

that publisher Lee Raath-Brownie and her team are doing to make sure that the Disaster Management Journal is published all the time to inform and educate its readers and disaster management practitioners.

As you are all aware by now, our immediate past-president, Dr Minnie in his last article alluded to the very successful DMISA DRR 2016 Conference that was held at ATKV Goudini Spa in Cape Winelands from 21 to 22 September 2016. He also introduced the DMISA new executive members and the outcomes of the biennale election of the president, deputy president, chairperson of the executive committee and additional executive members who I would like to acknowledge and hope will take the institute further in its mission in this coming two-year term from September 2016 to September 2018.

I have mentioned in my acceptance speech that it is an honour and privilege for me to inherit an institute that is in such a good trajectory in time and deeds. To appreciate that our institute is in good trajectory in time and deeds, one has to notice the good work that the past executive committee under the stewardship of our immediate past president and chairperson of the executive committee have achieve in the last two years of their term. The outgoing executive



committee has initiated what we, as disaster management practitioners, were all along dreaming of, that is, the professionalisation of our institute, which is a continuous project for the incoming executive. Moreover, the administrative efficiency has been improved tremendously in the context of the same professionalisation. Thus, our institute is now operating on its optimum, both in terms of what it seeks to achieve and what it has already attained in the short period of two years. The challenge to the new incoming executive committee is to maintain and improve on what has been achieved already.

In my acceptance speech, I also mentioned the need for the institute to be more accessible to the new recruits in the disaster management profession. This assertion does not suggest that our institute is closing off the new entrants to the profession. It means that the institute must take a conscious decision to be more accessible to this group of persons in the profession. The main reason for such an approach is to keep the profession flourishing now and in the future.

We all know that our profession in its current approach to disaster management is fairly new compared to other professions such as engineering. Yes, we had the Civil Defence and Civil Protection approaches previously but the recent Disaster Management Act introduced a new attitude to the profession, which we are still trying to grapple with from a legislative and practical perspective. So, to involve more young and fresh minds in the profession, we will be achieving two critical aspects for our profession to be a profession of the future.

Our first achievement will be to immediately create a platform for a generational mix in which the new entrants learn from a very small disaster management populace that is still within our midst and has its origin in the previous two approaches of Civil Defence and Civil Protection. Secondly, and most important, we will be creating a space for the new minds to input through research and new methods to our growing disaster management practice.

Turning the attention to our important stakeholders, that is the National Disaster Management Centre (NDMC), provincial disaster management centres (PDMCs), municipalities, South African Local Government



The 2016 DMISA Conference was held at Goudini Spa, Cape Winelands

Association (SALGA), South African Qualification Authority (SAQA), institutions of higher learning and private sector, each one has a special role to play in the institute in the next two years and beyond.

Now allow me to address the matters of the institute, in terms of the progress that we are constantly driving from one portfolio to the other since our last successful DMISA DRR 2016 Conference that was held at ATKV Goudini Spa in Cape Winelands from 21 to 22 September 2016. But firstly, let me confirm the allocation of the portfolios, the portfolios holder and councillors that were concluded on 24 November 2016 in Sanlam Building, Bellville, Cape Town:

1. Partnership, international relations, public relations and media liaison (Portfolio holder: Bafana Mazibuko: Councillors: Shadi Tsebe, Sandro Robberze and Dr Mal Reddy)
2. Regional matter, equity and recruitment (Portfolio holder: Mduduzi Nxumalo: Councillors: Wilfred Mkhwanazi, JJ Steyn and Frans Heystek)
3. Professionalisation of DMISA and website management (Portfolio holder: Dr Johan Minnie: Councillors: Gerhard Otto and Nabeel Rylands)
4. Finance, administration, sponsorship and conference (Portfolio holder: Pat Adams: Councillors: Anthony Kesten, Vincent Ngubane and Nareema Solomons)
5. Training, skills development, standards and tours (Portfolio holder: Owen Bekker: Councillors: Erika Swart, Thobela Memani and Thabo Kupari)
6. Journal production and marketing (Portfolio holder: Schalk Carstens:

Councillors: Johannes Belle and Lebogang Mosotho)

7. Protocol, legislation and policy writing (Portfolio holder: Mandisa Nohashe: Councillors: Ané Bruwer, Tshepo Motlhale and Sabie Losabe)

Portfolio reports

Partnership, international relations, public relations and media liaison

On the 27 February 2017, the portfolio holder had a meeting with SALGA on the Memorandum of Understanding (MoU) between SALGA and DMISA. In general, SALGA appreciated our approach to them on the matter. The meeting resolutions were as follows:

- That SALGA will present again the MoU to their legal department for the final consideration. It should be noted that the delay on the finalisation of the legal comments from SALGA were due to the re-alignment of all their MoUs.
- That SALGA acknowledges DMISA's Professionalisation process, which is in line with the current developments at Cooperative Governance and Traditional Affairs (CoGTA) ie regularisation of the municipal function such as disaster management.
- It was agreed that SALGA will share its New Strategic Framework of the next five years for this partnership to align the programmes of the MOU.
- It was also agreed that after the unbundling of the MOU in terms of the projects and programmes based on SALGA's New Strategic Framework, monthly meetings will be held to set time-line on the same projects and programmes.

- SALGA also noted the DMISA 2016 Conference Resolution that relates to them. However, SALGA resolved to send DMISA an official letter acknowledging receipt of the DMISA 2016 Conference Resolution, which will be followed by an official comprehensive response later.
- DMISA undertook to update SALGA on issues of mutual interest going forward.

Regional matter, equity and recruitment
The portfolio holder participated in national executive committee activities and hosted the EXCO meeting in February 2017. The portfolio holder has been in communication with regions to ensure that the membership was paid on time ie before the end of April 2017.

- On equity, the portfolio committee is encouraging female colleagues to be active in DMISA programmes and be available to be elected as leaders of committees. The portfolio committee is supporting the regional champions to develop strategies of encouraging membership from all races to fully participate in DMISA activities.
- To monitor compliance with the Equity Policy, quarterly reports of regions are scrutinised to monitor compliance with equity policies. Moreover, close liaison is maintained with the portfolio holders for regional matters and recruitment to ensure an integrated approach to the application of the equity policy.
- On recruitment of members to the institute, progress reports that include a comparative analysis of actual recruitment against targets set are submitted and reported on at each executive committee meeting.
- A strategy to ensure that regional committee recruitment portfolio holders follow up on membership subscription renewals and on applications for upgrades is devised and implemented.

Professionalisation of DMISA and website management

DMISA's efforts towards professionalisation have gained additional momentum through the finalisation of the suite of documents and procedures that will be used from 1 April 2017 with the launch of the DMISA professionalisation portal on the DMISA website.

The design of the portal in anticipation of its publication is progressing well. From 1 April applications will be open for all four registered designations and the exact impact of this new round of applications on the workload of the DMISA office and the interim registrar will be monitored to enable the early implementation of any contingency measures if required.

A very successful round of membership coaches' sensitisation was conducted by Owen Bekker with the KwaZulu-Natal regional executive prior to the recent EXCO meeting in Howick.

In February and March 2017, DMISA made a major contribution to the NDMC consultative session focusing on the career streams and competency frameworks submission to CoGTA for the Draft Municipal Staff Regulations. DMISA was represented by the president and the professionalisation portfolio holder, with other DMISA councillors also being present at the meeting.

Finance, administration, sponsorship and conference

The finance, administration, sponsorship and conference portfolio holder, Pat Adams reports that the DMISA office is administered in accordance with the rules of the Institute.

Annual renewal notices were mailed to all members. The administrator attended a Pastel Xpress course. The Pastel accounting system will be implemented from 1 April 2017 to coincide with the start of our new financial year.

The proposed budget for the new financial year 2017/18 was presented at the council meeting on 24 March 2017.

This year's conference will be held on 27 and 28 September 2017 at the Coega Vulindlela Accommodation and Conference Centre in Port Elizabeth. The portfolio holder visited the venue to ensure that it meets the requirements of DMISA. The invitations for the 2017 conference will be mailed by the second week in April to DMISA members and the wider disaster management fraternity.

Pat requested the Nelson Mandela Bay Metropolitan Municipality to respectfully host and sponsor the conference gala dinner on Wednesday, 27 September 2017.

Training, skills development, standards and tours

An induction course was conducted for

the newly elected National Council of DMISA on 23 November 2016.

A Membership Coaches manual has been developed by Dr Cindé Greyling, a pilot workshop was conducted with the KwaZulu-Natal regional executive and EXCO on 22 February 2017. Minor adjustments are being made to the document.

Draft codes of practice have also been developed by Dr Greyling, discussions will be held with the training portfolio and EXCO on 23 March 2017, to further develop them.

Other activities: The 2016 conference resolutions were formulated into a draft letters to the National Disaster Management Centre, SALGA and CoGTA. Content was also drafted for possible posting on the DMISA website.

Journal production and marketing

The latest publication was circulated to all members during December 2016/January 2017. The publication was very well received and members were especially thankful for the 2016 report regarding the Conference as well as photos in the publication. There are four publications planned for the 2017 calendar year. This is, however, again dependant on the sponsorships for adverts. The publication to be utilised as a marketing tool as far as possible

Protocol, legislation and policy writing

On this portfolio, members were made aware that there are new Municipal Staff Regulations that are still a draft stage which CoGTA is working on. The said regulations will have a profound impact on the disaster management practice at the local sphere of government.

The NDMC Advisory Forum could not seat in the last quarter ie from January 2017 to March 2017 due to the change of guard at the centre.

In closing colleagues, allow me to take this opportunity to formally congratulate Dr Mmaphaka Tau who was recently appointed as head of the centre at the NDMC. Again, as DMISA, we wish him and his team all of the best in their endeavour to position disaster management in its rightful place within government and beyond.

As the institute, we would also like to take this opportunity to thank Mr Ken Terry, who was the head of the centre at the NDMC, all the best in his new journey in the life of retirement. 

In the past 18 months we have witnessed some extreme weather systems in the country, as well as abroad too. Firstly, there was the severe drought that caused the whole country to introduce strict water savings measures. Then an unexpected 'cyclone' brought an immediate relief to most parts of the country, except for the Western Cape, which is currently under tremendous drought pressure. As the Western Cape steadily navigates the protracted drought declared disaster and the related water challenges it poses, dam levels are at 35 percent whilst they were 61 percent in the corresponding period last year.

Further disaster declarations and classifications in the Western Cape took place for the severe wind storm and Knysna fires too. Moreover, internationally there have been tremendous incidents of wildfires in North America and Europe, resultant flooding in Texas and Florida from record-breaking hurricanes, as well as in India, Nepal, Bangladesh and Pakistan from record breaking monsoons, record breaking heatwaves in Europe and California, large earthquakes in Japan and Mexico and lastly the largest coronal mass ejection (CME) solar flare ever recorded. The importance of disaster management and its role in the coordination of slow onset and immediate disasters, particularly with the proactive risk reduction planning required, needs to be acknowledged now more than ever.

It is with great pleasure that we welcome Dr Mmaphaka Tau back into the disaster management fraternity. Dr Tau was one of the senior managers at the National Disaster Management Centre (NDMC), who left the NDMC for promotion to another national department and returned to the NDMC to take up the position of the head of the National Disaster Management Centre. Dr Tau is a fully fledged and qualified disaster management practitioner and one of only a few officials who obtained a Doctorate in Disaster Management. Dr Tau, we know you will take us through the final phases of the implementation of the Disaster Management Act that is now more than 15 years old and it still has several outstanding mandatory requirements that are not being implemented yet.

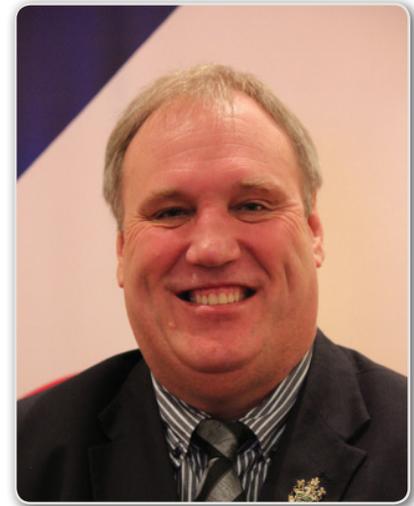
We have, in the past, in this publication (2011 DMJ volume 1 no 1, page 3), listed several areas of concern, which will be highlighted again in this publication. In the aforementioned publication the following was published:

"In South Africa, we have shown our intent and we have a good track record of implementing the principles of disaster management methodology but after more than a decade, post the promulgation of the Disaster Management Act, there is still a lot to be done." Some of the focus areas that we lack behind in and which national, provincial and municipal authorities still have to attend are:

- The lack of disaster management capacity (trained capacitated and knowledgeable practitioners)
- The lack of facilities and equipment; in a recent survey conducted by the National Disaster Management Centre (NDMC) and supported by a follow up report by South African Local Government Association (SALGA), it was highlighted that just more than 30 municipalities indicated that they have provided for some facility that they will utilise as a disaster management centre and only a few provincial governments have established such a facility.
- Some areas lack risk reduction initiatives in development. Each municipality should, as part of their Integrated Development Plan (IDP), have a disaster management section/ chapter in the IDP. That is also an aspect that is lacking behind.
- How many authorities have proper disaster management plans in place that could cater for all the hazards in their respective areas? The answer in this regard will also be – only a few!"

In a follow up publication, another point of concern was also raised in DMJ Volume 1 no 2, page 2, of this publication which mentioned the following: "Without political ownership of line function (sectoral) departments of all the applicable identified hazards, which could cause disasters on national, provincial and or municipal spheres of Government and the provision of adequate funding mechanisms that will enable these relevant departments and/ or state entities to deal effectively with its own hazards, the newly amended legislation might not solve one of the most inhibiting factors currently experienced with the implementation of disaster management namely, funding. This omission might now still result in that problems currently experienced, specifically with regard to funding of the disaster risk reduction, preparedness and recovery phases of each known hazard, will still continue to exist."

"We, as disaster management practitioners, have to insist that 'hazard' ownership and its funding



Schalk Carstens

principles are adequately registered in the new amended Disaster Management Act. Each hazard should through the mentioned legislation, be allocated to a specific national department and or entity, which then will be regarded as the hazard owner. This is mainly to ensure, that in future, the relevant departments would be mandated to take full ownership of their specific hazard/s, for example: The Department of Health for human epidemics, Department of Water Affairs for flooding, Department of Agriculture for drought and animal diseases, etc."

"Without adhering in solving the ownership and funding mandates in the current amendment legislation, we will definitely in future still experience severe problems relating to the funding of disaster risk reduction as well as disaster recovery activities."

From the above quoted sections, the following two main suggestions could be tabled to solve some of the implementation shortcomings.

The disaster management capacity problems could be solved through the immediate recognition of the DMISA SAQA registered professional categories and to ensure that these categories are utilised as a minimum requirement for all future appointments of 'Disaster Management Practitioners' in line function positions within all three spheres of Government.

The establishment of the Intergovernmental Committee on Disaster Management, as legislated in Section 4 of the Disaster Management Act, where the president of the country must appoint political office bearers involved in disaster management, ie ▶

DR MMAPHAKA TAU

HEADS UP NDMC



Dr Mmaphaka Ephraim Tau was appointed as the Deputy Director-General (Head) of the National Disaster Management Centre (NDMC) on 1 January 2017. Dr Tau heads up the NDMC after leaving his position as Deputy Director-General responsible for Forestry and Natural Resources Management in the Department of Agriculture, Forestry and Fisheries.

As head of the National Disaster Management Centre, Dr Tau is entrusted with the responsibility to coordinate implementation of Disaster Management and Fire Services in the country and contributing to the global disaster risk reduction agenda.

Background

Dr Tau, who hales from Limpopo, started

his career at the former Department of Land Affairs as a planner, then as a principal planner after which he was recruited by the Department of Water and Forestry to manage the forest land administration unit. He has a Bachelor of Arts majoring in Geography and English, which he obtained in 1995, a Higher Education Diploma obtained in 1996 and an Honours Degree in Development Studies, which he obtained in 1997, all from the University of Limpopo. In 2003, Dr Tau obtained a Masters in Development Studies specialising in rural development from the University of South Africa. He then was appointed as assistant director of Land Reform and Relationship Management.

From 2005 until 2008, Dr Tau served as Deputy Director for Veld Fires Oversight and in 2006, he enrolled for his Master's Degree in Disaster Management at the University of the Free State, which he obtained in 2008.

He served as senior manager for Disaster Management Capacity Building and Research at the Department for Provincial and Local Government, now Cooperative Governance and Traditional Affairs (CoGTA), from 2008 until 2014. During 2014, Dr Tau obtained a Philosophiae Doctorate in Development and Management through the North West University on the topic: An institutional model for collaborative disaster risk management in the SADC.

In 2014, he was appointed as chief director responsible for Natural Resource Management at the Department of Agriculture, Fisheries and

Forestry (DAFF) and in January 2016 as the deputy director general (DDG) responsible for Forestry and Natural Resources Management in DAFF where he served until 31 December 2016.

Dr Tau took over as head of the NDMC and DDG of CoGTA in January 2017.

He has already presented the outcomes of his research in two international forums i.e. the Academic Network for Disaster Resilience to Optimise Educational Development (ANDROID) held in Media City in the UK during September 2014 and the second biennial conference of the Southern African Society for Disaster reduction held in Windhoek, Namibia, during October 2014. He has also published an article in the Journal for Disaster Risk Science on his thesis.

His professional involvement includes the following forums:

- A founding member and Advisory Committee Member (ACM) of the Jamba journal for Disaster Studies
- A co-author of the Risk and Development Review (RaDAR) publication
- An Advisory Board Member (ABM) of Stenden South Africa University: Department of Disaster Management
- Founding member of the Southern African Society for Disaster Reduction (SASDiR) and
- A founding team member of the University of Venda (UNIVEN) and Department of Cooperative Governance (DCoG) collaboration on programme development on disaster risk sciences that forms part of the conference.

▶ national cabinet members, members of the executive committees (MECs) in provinces as well as members of municipal councils. The establishment of this committee would then hopefully resolve some of the primary and secondary (hazard based) ownership uncertainties currently not resolved and hopefully will determine the funding issues namely who pays for what, when and what funding mechanism to be applied for risk reduction as well as disaster preparedness, response and recovery. Regulations or policy

guidelines should be developed for this purpose as soon as possible.

We are lucky to have the cooperation of a range of stakeholders but especially through close cooperation of officials of the NDMC as well as members of DMISA to progressively address some of the processes that is needed to solve the disaster capacity, funding and ownership problems. This is why it is with great anticipation and gratitude to conclude the outstanding tasks under the leadership of Dr Mmaphaka Tau and his team.

With this remarks, it is again necessary to convey a hearty and sincere appreciation to all who have contributed towards this edition of the Disaster Management Journal. Without the contribution of others who have provided us with their very interesting, informative and well researched articles. Last but not the least, without the excellent contributions, assistance and support of our publisher and editor, Lee Raath-Brownie, this publication would not have been possible. 🇿🇦

Vision for disaster management and fire services

FRI Media, publishers of Fire and Rescue International and Disaster Management Journal, met up with Dr Tau and he provided some insight into the way forward, his vision for the NDMC and the immediate plans.

Dr Tau said during the interview, “I am an advocate of sustainable development. It is an honour for me to be associated with this important discipline as I am a firm proponent of disaster risk reduction principles and practices and I fully support observations by the Z Zurich Foundation (1973) that every one Rand spent on risk reduction measures saves five Rands in avoided or reduced disaster losses. I am also deeply concerned about the prevailing global converse to the disaster reduction mantra, which points out that 87 percent of all disaster-related funding is targeted at relief and recovery. This is a situation that I believe needs to be reversed through improved hazard and risk assessment, monitoring and aggressive roll out of cross sectoral risk reduction measures. I therefore believe that existing pieces of legislation such as the Disaster Management Act 2002 (Act 57 of 2002 as amended), its policy framework of 2005 (the NDMF 2005), sectoral policies and legislation, such as the National Climate Change Response White Paper 2011, should be read and executed within the framework of regional and global strategies and commitments existing in the Southern African Development Community (SADC), African Union and the United Nations (UN) eg the Sendai Framework for Disaster Reduction 2015, the Sustainable Development Goals, etc). This therefore makes the case for Ecosystems-Based Disaster Reduction (Eco-DRR) critical with streamlined response capacity and systems, given the magnitude and severity of hazards,” said Dr Tau.

He continued, “To this end the country needs to consider adopting a national DRR strategy responding to national, regional and global commitments outlined by the Sendai Framework for disaster risk reduction (DRR) and the sustainable development goals (SDGs).”

“The NDMC’s subsidiary vision should fit in properly with the CoGTA vision: “a functional and developmental local government system that delivers on its constitutional and legislative mandates within a system of cooperative governance.”

"An intelligent person without passion, will be out-performed by an average person with passion"

“A vision statement for the NDMC would be, “By 2030 service delivery and development will be on the same path with disaster risk management as complementary discourses.” This speaks to the long term plans and duties for disaster management and fire services.”

“However, work must start now, so that by 2030, we should see the three tiers namely, service delivery, development and disaster risk management, in a report showing them being on the same level. To achieve this, the following five questions need to be addressed:

- What needs to be changed?
- Why should issues be addressed?
- What are the strengths and assets that we have?
- What is our dream end-state (2030 vision)?
- What will success look like?”

Dr Tau elaborated, “I believe that strategic partnerships, resourcing of disaster risk management programmes, local ownership and political buy-in and championship, remain some of the key ingredients of our desired collective success. Therefore the work of the disaster management system will be shoehorned on the Batho Pele ethos notably: ‘We care, we belong, we serve,’ as we marshal the disaster risk management system towards the National Development Plan (NDP) 2030 aspired eventuality decidedly: ‘..... now in 2030 we live in a country we have remade’.”

“The NDMC and broader CoGTA family and the provincial and municipal custodians of disaster management and fire services, remain my pillars of strength in my pursuit of taking the disaster risk management function to the next higher level in the interest of the communities we serve.”

Immediate duties and plans

We asked Dr Tau to detail the immediate duties and plans of the NDMC for disaster management and fire services to which he replied, “I believe that it is time for the leadership in the disaster management and fire services across the spheres of government;

to ‘move from the dance floor to the balcony where you can continually do corrective action and meet-cause-action’, meaning that you fix as you carry on and that this is a key element of adaptive leadership. My wish is to adapt to the new environment, as well as adapting and embracing things that I realise are positive and also be able to adapt/adjust where I deem it necessary. This is a process where one is able to mobilise people to thrive and also be able to rise to the occasion when time comes to deal with challenges. I believe this is the best way to take the best from history while moving into the future.”

He added, “The founding philosophy can be stated by using a quote from Maxwell that, “Bad decisions come about where people are not held to account early enough” and furthermore referring to Maxwell’s book, the Leadership Gold, that “an intelligent person without passion, will be out-performed by an average person with passion”.

“As the disaster management and fire services fraternity, we are able to define our trajectory, clarify roles and espouse the professionalism principles, it will be easy that we all can hold each other accountable and not in a negative way but correctively so, so that we can remain focused and dedicated to our work to serve our communities. I strongly advocate that we must recognise each other as individual and important resources contributing towards achieving the joint and bigger picture of the work of disaster management and fire services,” said Dr Tau.

Medium term plans and duties

Discussing the medium term plans and duties, Dr Tau commented that “The approach that I will devise as head of the NDMC and in consultation with the broader fraternity, will be based on a fit for purpose and situational conscience philosophy applying disaster risk management plans, sector plans, municipal IDPs, the Back-to-Basics strategy and strategic disaster risk reduction projects as key vehicles. I therefore believe that all stakeholders and role players, inclusive of the academic and other civil society formations, will also be pivotal to doing our work.”

Fire and Rescue International wish Dr Tau the best with in his new position as head of the NDMC. 🇿🇦

MEET MDUDUZI LANCELOT NXUMALO, DEPUTY PRESIDENT OF DMISA

By Patrick Adams



Mdu Nxumalo

Mduduzi Lancelot Nxumalo, affectionately known as Mdu Nxumalo, was elected in September 2016 to September 2018 as the deputy president of the Disaster Management Institute of Southern Africa (DMISA). Pat Adams provides some insight into Nxumalo's career.

Mdu Nxumalo was born on 4 October 1973. He is married and lives in Pietermaritzburg. Nxumalo has completed courses between 2002 and 2013 in Basic Disaster Management, Human Resource N4, N5 and N6, Councillor Development Programme, Local Government and Development Management, Skills Development Programme in Disaster Risk Management, Programme in Business Continuity Management and Advanced Management Diploma.

He completed his first degree, a Bachelor of Public Administration from the Management College of Southern Africa in 2015. Nxumalo started a Bachelor of Public Administration Honours Degree through the same institution in 2016.

He started his career in local government at the uMgungundlovu District Municipality as a senior committee officer in 2005 until 2008. He was appointed as the fire and disaster prevention officer in August 2008 and as acting head of the disaster management centre in 2009 to 2010. In July 2012, Nxumalo was appointed to the position of manager: disaster management operations and from December 2016 appointed

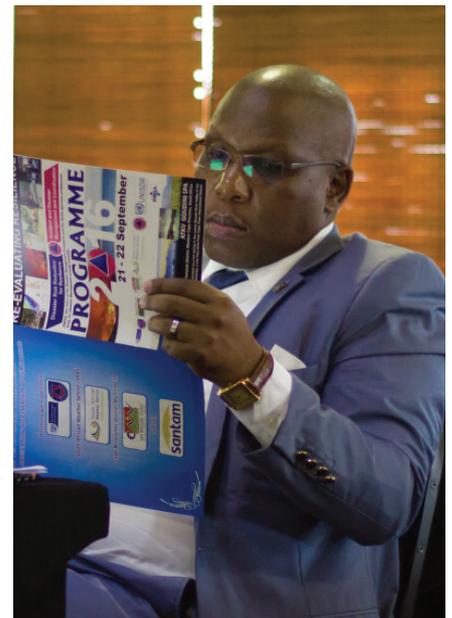
as manager: office of the mayor and disaster management at the same district municipality.

Some of his major assignments was the appointment as internal safety officer for the Mandela Marathon for 2012 and 2013, events coordinator to champion the 2011 council's izimbizo, budget consultation and Integrated Development Plan (IDP) processes during 2011/2012, 2012/2013 and 2013/2014 financial years. Additionally he was appointed as the Africa Cup of Nations (AFCON) coordinator to manage the public viewing area at the Indumiso Durban University of Technology (DUT) Campus from 19 January to 10 February 2013.

Nxumalo is no stranger to DMISA. His journey with the institute started in September 2010 to 2014 as secretary for the KwaZulu-Natal DMISA region. He has also served on the National Council since 2012 to date and as an executive committee member from 2014 to 2016 with the portfolio equity, recruitment and website management. In 2016, he was elected as deputy president and executive committee member with the portfolio regional matters, equity and recruitment for the period 2016 to 2018.



Taking oath in 2016 as DMISA's deputy president



Nxumalo started his journey with DMISA in September 2010 as secretary of the KZN region

A CONSEQUENCE MANAGEMENT APPROACH TO DISASTER MANAGEMENT: WHY? PART 1

By Dr Johan Minnie and Schalk Carstens

In this series of articles a consequence management approach to the reactive elements of disaster management will be discussed. The basic departure point of the authors is that consequences and the responsibilities for dealing with those consequences forms a logical and useful point of departure and organising framework for dealing with disaster preparedness and response. While the articles following on this one will unpack the details of a consequence management approach to disaster management, this first article will state the case for a consequence management approach.

Why consequence management? Consequence management planning enables the combination of disaster preparedness, response and relief in a single, all-hazard, operational, tactical and strategic plan. Consequence-based planning ensures the involvement of multiple stakeholders (hazard owners) in preparing for and responding to multiple types of incidents through the execution of predetermined standardised

If you plan for the worst, you can handle everything else

- Prof Barney de Villiers

activities. Consequence-based planning enables coordination and management of disparate entities, entities both experienced and inexperienced, educated and uninformed of incident command and control into a unified command and multi-agency coordination structure.

In developing this series of articles, the authors considered the Western Cape Disaster Preparedness, Response and Relief Procedure established in 2007, the City of Cape Town Multidisciplinary Incident Management Plan (MIMP) established in 1999, various manifestations of the Incident Command System ICS (ICS) and Major Incident Medical Management and Support (MIMMS) system, other multi-agency multi-hazard response management plans as well as the African Centre for Disaster Studies/USAID Knowledge Product 38: All-Hazard Preparedness and Response Planning developed in 2015.

The suggested consequence management approach is the logical outflow of developments in the concept and practice of disaster management in South Africa. From 2000 to 2001, the Western Cape Disaster Management Centre initiated the development of a multi-purpose emergency management centre. In the years 2001 to 2005 the concept of the centre developed but with a difference to the standard layout of a joint operations centre (JOC) at the time. The centre, already separated from the call-taking and dispatch function, incorporated a clear distinction between tactical coordination and strategic decision-making components.

From 2004 to 2010, the concept of a coordinated but cluster-based tactical centre forced a transition from the hard copy Civil Protection individual hazard plans to a computer-based multi-sectoral, multi-disciplinary approach ▶



Figure 1: Disaster response workflow (Carstens and Minnie, 2014)

His hobbies include being an avid Sundowns Soccer Club supporter and he loves watching action movies.

He loves serving God, from whom he draws his strength. He is a senior pastor and founder of the Temple of Worship International Church based in Pietermaritzburg in KwaZulu-Natal, ministering the word of the nations since 2013.

Nxumalo is a man of integrity with high ethical standards. He is goal orientated, conscientious, committed and dedicated to the cause. He is highly respected and very principled. I am convinced that he will continue to excel in providing effective, passionate and visionary leadership in the Institute and broader disaster management fraternity. 🇿🇦



In Durban with Dr Mal Reddy



A young Mdu Nxumalo

- ▶ along with the development of a unified multi-agency coordination system and all-hazard plan. By 2010 this approach was used in the 2010 FIFA Soccer World Cup planning, in a provincial Social Conflict Plan, a provincial Agriculture Plan and in the City of Cape Town for all contingency plans. In 2014 the concept was developed into a USAID Knowledge Product called All-Hazard Preparedness and Response Planning.

Prior to 2002, individual Civil Protection-based plans existed in the Western Cape for individual hazards, for example individual plans for fire, epidemics, floods and drought. These were hard copy, stand-alone plans. After 2002 a new approach was applied that was more focused on the consequences of hazards which were identified in disaster risk and vulnerability assessments, with significant funds invested in the development of a provincial risk profile (software and research). The outcome of this research identified 32 specific hazards, then went through process of who, what and how, where, when and why, which in turn resulted in the identification of at least 122 role-players and that again led to development of 72 all-hazard activities to deal with the consequences of risk in the province.

The planning process for hazards will need to factor in the lifecycle of disaster response, starting with hazard identification and moving to action when the hazard impacts. The lifecycle can be termed a disaster response workflow as illustrated in Figure 1.

The disaster response workflow serves to illustrate that when a risk or potential hazard translates from risk to reality, a logical flow of reaction is initiated. In short, the hazard realises and has a specific impact which in turn has a set of consequences. The consequences presents a challenge that is allocated

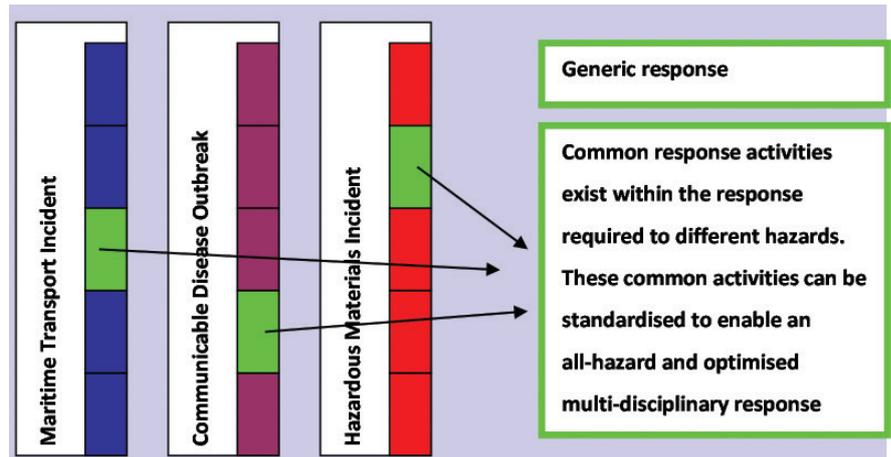


Figure 2: Common response activities can be standardised to increase efficiency (PGWC, 2009)

to those responsible for dealing with the consequences, after which those responsible then take action in accordance with their responsibility.

The disaster response workflow is a simple tool that allows planners to analyse the life cycle of disaster response to any specific hazard and identify stakeholders and actions required to deal with the hazard.

By iteratively developing hazard-specific disaster response workflows for a number of hazards, a pattern of common elements that remain essentially the same irrespective of hazard, will emerge to form the basis of an all-hazard response plan. In one example of such a process, the common elements of disaster response and incident management were listed as around 72 generic response actions. This process involved identifying the possible disaster response activities that would be required to deal with the possible impacts of hazards. The focus was specifically impacts and not risks, and developing activities that could be used in response to more than one hazard, since different

hazards may have similar impacts which require the same response activities.

Due to the fact that certain response activities are common in various hazard-specific responses, it is possible to standardise certain generic response activities and actions to enable and support more integrated multi-disciplinary response and support all-hazard preparedness and response planning.

In the example in Figure 2, The Western Cape Disaster Response and Relief Plan, the developers set out to identify common response and relief activities and then describe them in order to encourage standardisation and mutual understanding between responding parties.

The disaster response workflow already described above provides an implementation process for the development of consequence-based all-hazard preparedness, response, relief and rehabilitation plan.

In the next article the authors will discuss response management. 🌐

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MUNICIPAL STAFF REGULATIONS

AND DISASTER MANAGEMENT CAREER STREAMS

By Dr Johan Minnie, DMISA EXCO: Professionalisation Portfolio

The September 2016 publication of the draft Local Government: Municipal Staff Regulations has significant potential impact on local government disaster management functionalities.

DMISA provided comments on the draft regulations and has participated in consultation sessions regarding the content of the proposed local government career streams.

The Local Government: Municipal Staff Regulations (MSR) as per the Local Government: Municipal Systems Act, 2000 (Act no. 32 of 2000), were issued for public comment by the Department of Cooperative Governance in September 2016.

DMISA provided comments on the MSR including its Competency Framework in November 2016 and consulted with internal regional leadership structures on its position regarding the MSR and Occupational Streams in November 2016. DMISA then reported on its comments at a technical committee meeting at the National Disaster Management Centre (NDMC) in January 2017 with a focus on the SAQA-registered Disaster Management designations.

The institute subsequently submitted its revised comments on 6 February 2017 after additional consultation, also with the NDMC – including elements of National Disaster Risk Management Education and Training Framework (NDRMETF) (Chapter 6) and pointing out gaps in the content of the occupational stream description.

After additional consultation with the technical committee member designated for the Disaster Management competency framework, DMISA received and evaluated the latest version and subsequently provided feedback on this latest version indicating some reservations, which were also discussed with the NDMC.

An updated presentation was submitted at a NDMC consultation session on 3 March 2017 and another revision based on the discussions of 3 March 2017 was provided to the NDMC on 4 March 2017 for consideration for submission to the technical committee.

It is expected that some more opportunity for providing input may be provided for between the NDMC and the technical committee.

DMISA's comments are of course influenced by the SAQA registered designations for Disaster Management practitioners and DMISA's position as SAQA registered professional body for Disaster Management.

Based on DMISA's understanding of the process, the following table provides an overview of what is seen as a potential career stream for what will be called a disaster management officer in the new Municipal Staff Regulations.

This is seen as a generalist role covering all aspects of disaster management but it is felt that this career stream can also cater for specialist roles inside disaster management organised by components of disaster management mentioned in the Disaster Management Act or the key performance areas from the National Disaster Management Framework.

DMISA will continue to serve the interests of its members and the discipline and to provide the fraternity with a voice at the policy level and will report back to its members on progress in this regard.

	Step 1: Entry Level	Step 2	Step 3	Step 4	Step 5	Step 6
A possible path of progression for a Disaster Management Officer	Disaster Management Officer	Senior Disaster Management Officer	Principal Disaster Management Officer	Deputy Chief Disaster Management Officer	Chief Disaster Management Officer	Head: Disaster Management Centre (Statutory Appointment)
		Registration: Technician SAQA Designation ID 760 (NQF5)	Registration: Associate SAQA Designation ID 761 (NQF6)	Registration: Practitioner SAQA Designation ID 762 (NQF7)	Registration: Professional SAQA Designation ID 593 (NQF8)	Registration: Professional SAQA Designation ID 593 (NQF8)
		DMT	DMA	DMPc	PrDM	PrDM

Figure 1: Career stream for a disaster management officer

THE NEXT LEVEL: DMISA REACHES ANOTHER MILESTONE ON THE PATH TO PROFESSIONALISATION

By Dr Johan Minnie, DMISA EXCO: Professionalisation Portfolio



On 1 April 2017, a new chapter in the professionalisation of disaster management commenced with the opening of applications for the remaining three SAQA-approved designations for Disaster Management. Additional to the existing Disaster Management Professional (PrDM), disaster management functionaries can now apply for registration as Disaster Management Practitioner (DMPc), -Associate (DMA) or -Technician (DMT).

DMISA has pursued the professionalisation of the disaster management discipline for a number of years. The reason for this quest to professionalise is the clear need to establish minimum standards in the practice of disaster management, which in turn is an expression of DMISA's simple goal of supporting its members and the profession in general to be as good at reducing disaster risk as they can possibly be.

The members and elected leadership of DMISA are convinced that society deserves the best possible disaster management personnel and that persons responsible for implementing the essentials of resilient communities should be operating at their optimum levels of effectiveness and efficiency. In

short, if you do disaster management, you should be at the top of your game, the best you can possibly be. These functionaries should be recognised as professionals with a mandate for real action and the discipline they commit themselves to as disaster managers should be recognised and respected. In moving towards these objectives, the self-confidence and esteem of practitioners need to be strengthened and the extent, reach and nature of the profession should be clarified and clearly delineated.

In order to advance the professionalisation agenda, DMISA applied for and became the SAQA-approved professional body for disaster management in South Africa. As part of the recognition as professional body, first one and then an additional three designations were applied for and approved by SAQA, namely that of Disaster Management Professional (PrDM), Disaster Management Practitioner (DMPc), Disaster Management Associate (DMA) and Disaster Management Technician (DMT).

DMISA has been very busy preparing and implementing the documents, systems and procedures to accommodate the governance of the four designations and all the resources required by potential applicants to apply for registration and to maintain their registration through continuous professional development. On 1 April 2017, DMISA also went live with its professionalisation portal on the internet, accessible from www.disaster.co.za and containing all the relevant information and resources required.

All disaster management functionaries interested in professional registration can visit the portal to familiarise themselves with the requirements and process for registration. DMISA understands the need for potential applicants to be supported or coached through the process and resources for DMISA membership coaches has been developed, is constantly improved and has already been workshopped successfully with the KwaZulu-Natal and Western Cape regions' leadership. Similar interventions were planned for Algoa in May and Magalies, Southern Gauteng, Free State and Limpopo in July. 🇿🇦

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3 March 2015

Mr Pat Adams
The Chairperson of the Executive Committee
Disaster Management Institute of Southern Africa (DMISA)
PO Box 7130
PRIMROSE HILL
1417

E-mail: pat.adams@durban.gov.za

Dear Mr Adams

RECOGNITION OF THE DISASTER MANAGEMENT INSTITUTE OF SOUTHERN AFRICA (DMISA) AS A PROFESSIONAL BODY AND REGISTRATION OF ITS PROFESSIONAL DESIGNATIONS

The Directorate: Registration and Recognition is pleased to inform you that the SAQA Board approved the recognition of the Disaster Management Institute of Southern Africa (DMISA) as a Professional Body for the purposes of the NQF Act, Act 67 of 2008. It also approved the registration of the following Professional Designations on the NQF:

- Disaster Management Professional

Your attention is drawn to the following sections in the **Policy and Criteria for Recognising a Professional Body and Registering a Professional Designation for the Purposes of the National Qualifications Framework Act of 2008**:

18. In administering the policy and criteria for the recognition of professional bodies, SAQA shall:

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Society deserves the best possible Disaster Management personnel, that is why DMISA is supporting the professionalization of the Disaster Management discipline, has been recognised by SAQA as the professional body for Disaster Management in South Africa, and has successfully applied for the registration of the first SAQA-approved designation for Disaster Management, being that of “Disaster Management Professional (PrDM)”.

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EKURHULENI DISASTER MANAGEMENT CENTRE



The Ekurhuleni Disaster Management Centre (EDMC) is situated in Bedfordview in the heart of the Ekurhuleni Metropolitan Municipality (EMM), the East Rand region of Gauteng, South Africa. The name Ekurhuleni means place of peace in Tsonga. The metro is also home to South Africa's largest public aerodrome, OR Tambo International Airport, which is the hub for most international and domestic travel from and in South Africa. It is also the largest and busiest airport in Africa. Ekurhuleni is home to a large number of industrial areas and an important manufacturing centre in South Africa.



Acting head of centre,
Bafana Mazibuko

FRI Media, publishers of Fire and Rescue International and the Disaster Management Journal, visited acting head of centre Bafana Mazibuko.

The Disaster Management Centre (DMC) of city was established in the same year the metro was formed in 2000 with nine different local municipalities in the East Rand including Nigel, Boksburg, Springs, Germiston, Kempton Park, Benoni, Alberton, Edenvale and Brakpan merged into one municipality. In 2005, the first building to be declared as a DMC was completed in Bedfordview.

The DMC forms part of city's Disaster and Emergency Management Services (DEMS) Department. The disaster management division is one of the seven divisions in department. The other divisions being:

- Emergency services division
- Strategic planning and monitoring division
- Governance and compliance division
- Stakeholders division
- Projects division
- Support services division

Budget

The total budget for the city's Disaster Management Division for the 2016/17 financial year is R34 843 341 for operational cost, which excludes R65 965 338 for personnel costs. The division has a staff complement of 174 with about 26 vacant positions. The 174 personnel are both the disaster management and emergency call centre employees.

Challenges

The biggest challenge faced by the centre is staff shortages in disaster management as the municipality has 12 dedicated disaster management officials (DMOs). However, the institutional review process that is underway in the city will address this challenge.

Operations

The Disaster Management Division's emergency call centre operates a 24-hour service that operates 24/7. The Division houses the joint operational centre (JOC), which is activated the moment a big disaster and/or emergency incident occurs in the municipality. The head of the centre becomes the chairperson of the JOC operations with all the municipal departments and external role players becoming the stakeholders in the JOC. The head of department of Disaster and Emergency Management Services (DEMS) becomes a strategic link to the political oversight and senior management ie the member of the mayoral committee (MMC), the executive mayor and the city manager. The disaster management officials are the information feeders to the JOC, which is assisted administratively by the manager: DMC as a secretariat.

The city's Disaster Management Centre is currently being upgraded to expand the layout and functionality, which will include office space, operational centre, media area and stakeholders' auditorium. The facility will also be adjoined to the main Disaster and Emergency Management Services

(DEMS) department headquarters building. This is done to comply with the National Disaster Management Centre minimum guidelines on a functional disaster management centre.

In line with the Digital City agenda of the city, the future plans is that the DMC will be moved from Bedfordview to Kempton Park as part of a unified command centre. The new unified command centre will be a one-stop shop wherein all the different functional-based call centres will be under one roof. The current upgraded centre in Bedfordview will then become the fall-back centre.

Risk profile

The most common emergency scenarios that the City of Ekurhuleni encounters include floods, fire, storms and strong winds. During the 2016/17 financial year, the DMC was activated more than three times due to the municipal water crisis, the tornado incident and the provincially declared flood disasters. In each instance the centre was operational for more than two weeks.

The municipality has mine shafts in the mining belt and forty percent dolomite land. To address these challenges the City of Ekurhuleni engaged the Council



Bafana Mazibuko, acting head of centre; Millicent Ndwalane, deputy manager: emergency call centre; Mandla Mnyandu, senior manager: emergency call centre and Shadi Tsebe

for Geo-Science and the Department of Mineral Resources to deal with the open mine shafts and sinkholes. On the issue of the dolomitic land, the municipality has dolomite risk section in the City Planning Department, which is trying to pro-actively deal with sinkhole challenges.

Preparedness plans are well developed and form part of the Integrated Development Plan (IDP) in terms of legislative requirements. From time to

time contingency plans are used to respond to incidents and/or disasters.

The DMC's disaster risk reduction policies and programmes include:

- Awareness programme for floods
- Awareness programme for shack fires
- Risk and hazard identification programme
- Preparedness in homes for the aged
- Critical Infrastructural contingency plans

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The Ekurhuleni disaster management centre is currently being upgraded

Staff

The city’s Disaster Management Division is divided into two sections with the one section focusing purely on disaster management and the other being the emergency call centre.

The divisional head of the disaster management division, Bafana Mazibuko, is currently the acting head of the centre assisted by two executive managers, one for each section. Shadi Tsebe heads up the disaster management section and Mandla Mnyandu the emergency communications section. Each section has three regions, which is south, east and north with regional managers. In each region, there are around three disaster management officers and four learnerships/internships. The division has a staff complement of 174 with about 26 vacant positions. Twelve of the 174 personnel are disaster management practitioners.

The training of the personnel is based on the Work Skill Programme (WSP) and has a multitude of training programmes.

We asked Mazibuko whether he felt that there is enough staff for the number of

incidents and he replied, “There is a lack of capacity in the disaster management centre. However, the Ekurhuleni Metropolitan Municipality (EMM) is employing extra people to fill these gaps.”

Equipment

Some of the technology and equipment invested in the current centre includes the General Emergency Management Command, Control and Coordinate (GEMC3) system and is web-based. The GEMC3 system has a Disaster Module that is used to upload hard copies. “We are currently investigating the use of hand-held devices that will be used to do assessments during incidents,” added Mazibuko.

Interagency involvement

All City of Ekurhuleni departments and other external role-players are part of the Disaster Management Advisory Forum, which meets once per quarter.

We asked Mazibuko what he would do better given the funds and opportunity to which he replied, “Disaster Management has to be placed in the Corporate Cluster of Departments such as the Risk Management Department and

Corporate Legal Department. Moreover, the institutionalisation of the Disaster Risk Register should be similar to the business risk register.

Head of centre

Bafana Alfred Mazibuko is currently the acting head of the centre since May 2016. His career started at Ekurhuleni Disaster Management Centre in the Metro Call Taking Centre as the superintendent for communications in January 1999. From December 2006 to May 2008, he served as the senior disaster management officer for Ekurhuleni’s Southern Region and from June 2008 to 31 October 2013 he worked as the disaster management centre manager at the Ekurhuleni Disaster Management Centre. Mazibuko was appointed the senior manager for disaster management from November 2013 to May 2016 after which he temporary took over from Anthony Kesten.

He completed a Municipal Finance Management for Non-Financial Managers course at the Resonance Institute of Learning. He also studied towards his Master’s Degree in Disaster Management through the University of the Free State (DiMTEC) but could not finalise the dissertation. Among his many academic achievements, some of the highlights are an Advanced Diploma (Honours) in Disaster Management from DiMTEC in 2009 as well as a Diploma in Humanitarian Assistance from Liverpool School of Tropical Medicine, where he qualified to NQF Level 7 in the same year. Mazibuko also completed a Diploma in Disaster Management at University of South Africa (UNISA) in 2004. Prior to obtaining his disaster management qualifications, he studied at University of Johannesburg where he received a Master’s Diploma, with Honours, in Human Resources and at University of the Western Cape (UWC), where, in 1995, he received a Bachelor of Arts.

In 2014, Mazibuko was elected as the deputy president of DMISA and became the president of DMISA in 2016. 🇷🇷



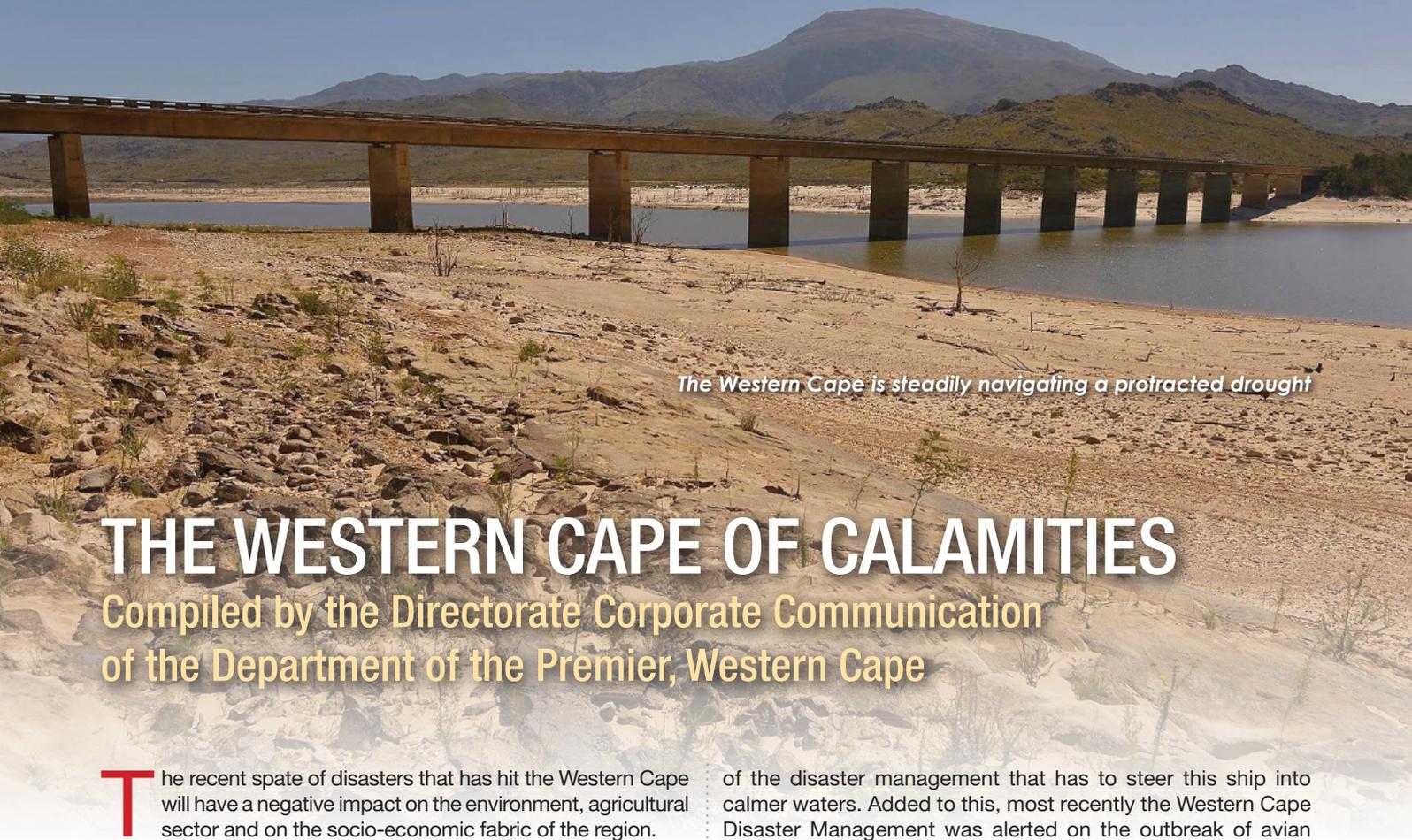
The Ekurhuleni Emergency Management call centre

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The Western Cape is steadily navigating a protracted drought

THE WESTERN CAPE OF CALAMITIES

Compiled by the Directorate Corporate Communication of the Department of the Premier, Western Cape

The recent spate of disasters that has hit the Western Cape will have a negative impact on the environment, agricultural sector and on the socio-economic fabric of the region.

The Western Cape is steadily navigating a protracted drought and the related water challenges it poses. Over and above the drought, it was also affected by severe storms and fires. This triumvirate of disaster incidents has challenged the fortitude

of the disaster management that has to steer this ship into calmer waters. Added to this, most recently the Western Cape Disaster Management was alerted on the outbreak of avian influenza in certain parts of the province.

Provincial drought and interventions in municipalities

The province is currently experiencing the effects of a debilitating protracted drought. This drought has affected the agricultural sector and several urban areas. Several municipalities have requested and made application to declare their municipalities as disaster areas. The province was duly classified as a provincial drought disaster by the National Disaster Management Centre on 25 May 2017 and, as such, declared as a provincial state of drought disaster by the Western Cape Provincial Cabinet on 16 August 2017.

Additional national government funding pertaining to the declared state of disaster for drought was so far only allocated to three municipalities and the Provincial Department of Agriculture. An amount of R74 866 263 was transferred for emergency disaster relief to Bitou that received R10 920 000, the City of Cape Town received R20 812 483, Theewaterskloof received R3 133 780 while R40 000 000 from the Provincial Disaster Grant was allocated to the Provincial Department of Agriculture.

The allocation of R10 920 000 to Bitou is to implement their listed projects that includes the drilling and testing of boreholes in Kurland, Uplands, Kwanokuthula and Harkerville. Theewaterskloof Municipality will utilise the funding for the equipping and exploration of boreholes in Riviersonderend, Genadendal, Villiersdorp, Greyton and Bereaville. The City of Cape Town has put forward their listed project for the drilling of boreholes in the Table Mountain Group (TMG) Aquifer. The Western Cape Disaster Management Centre is currently managing/facilitating 17 different disaster declarations.

Premier Helen Zille, in her media statement of 1 September 2017 on the municipal drought interventions, said that, “Geo-hydrologists have been appointed in all districts to



Between 408 formal settlements and 200 informal settlements were destroyed in Knysna

manage groundwater operations. Provincial engineers are partnering with municipalities to track their water usage. Our disaster management services are working flat out on priority projects worth R295 million.” She further elaborated, “This is a whole of society effort by Team Western Cape, including residents who are doing their bit to save water in their own homes and businesses. We can avoid Day Zero but only if we work together.”

Colin Deiner, the province’s head of disaster management, said high risk municipalities are considered to be Beaufort West, Kannaland, Knysna and Bitou. Medium risk municipalities are concentrated in the West Coast and Cape Winelands districts, as well as parts of the Southern Cape ie Hessequa, Oudtshoorn and George.

“We are working with these municipalities to drill boreholes, equip pump stations and lay pipelines where required. Schools and hospitals in priority areas have also been identified for borehole drilling,” said Deiner, who had previously coordinated the largest disaster effort in the province’s history in June this year, following the Cape Storm and fires in southern coastal areas. Interventions underway in high risk municipalities include:

- Beaufort West: Equipping and connecting of eight boreholes and new pipeline to Kleinhansriver pump station - R34 million
- Knysna: Upgrading of Charltsford and Eastford supply schemes, refurbishing the local desalination plant and various demand management initiatives - R140,5 million
- Bitou: Drilling and equipping of 12 boreholes - R20,5 million
- Kannaland: Install temporary pipeline to move abstraction point upstream, repair channels and pipes, ramp up War on Leaks - R3,8 million

“These municipalities have an estimated supply of approximately three months of water. Beaufort West and Kannaland are located in very dry parts of the province generally. In the case of Knysna, the system has historically allowed for only 90 days of reserves but risk levels have heightened and supply interventions are underway,” said Deiner.

An appeal was made by the Minister of Local Government, Anton Bredell, to the public to allow the province’s dams as much space as possible to recover.

Severe storm and fires

The Western Cape Province was affected by severe storms and devastating fires between 6 and 11 June 2017. The fires occurred in Knysna and Bitou Municipalities on the back of extremely strong gale force winds, which were exacerbated by the protracted drought currently plaguing the province.

Gale force winds ravaged the province with average wind speeds of between 60 and 70km/h with gusts of 80 and 100km/h recorded and very high sea levels ranging between 10 to 12m. Subsequently, several roofs were blown off, trees uprooted and roads closed. Chapmans Peak and Huguenot Tunnel were closed to motorists. Significant damage was incurred to municipal infrastructure and informal structures. The Western Cape Education Department reported that approximately 170 schools were damaged by the effects of the gale force winds. Fortunately, all the schools were closed on 6 June 2017 in anticipation of the weather. George experienced housing damage of approximately R23 million.

The fires in Knysna and Bitou have caused immeasurable damage and losses to housing. Between 408 formal settlements and 200 informal settlements were destroyed



The fires in Knysna and Bitou have caused immeasurable damage and losses to housing

in Knysna. Approximately 14 000 hectares of forestry were burned. Preliminary damage assessment estimates the damage and losses to the Garden Route to amount to billions of Rand.

The premier has established the Garden Route Rebuild Initiative (GRRI) to develop a renewal strategy for the area. The GRRI will ensure that public and private funds support projects prioritised by the GRRI processes and that ▶

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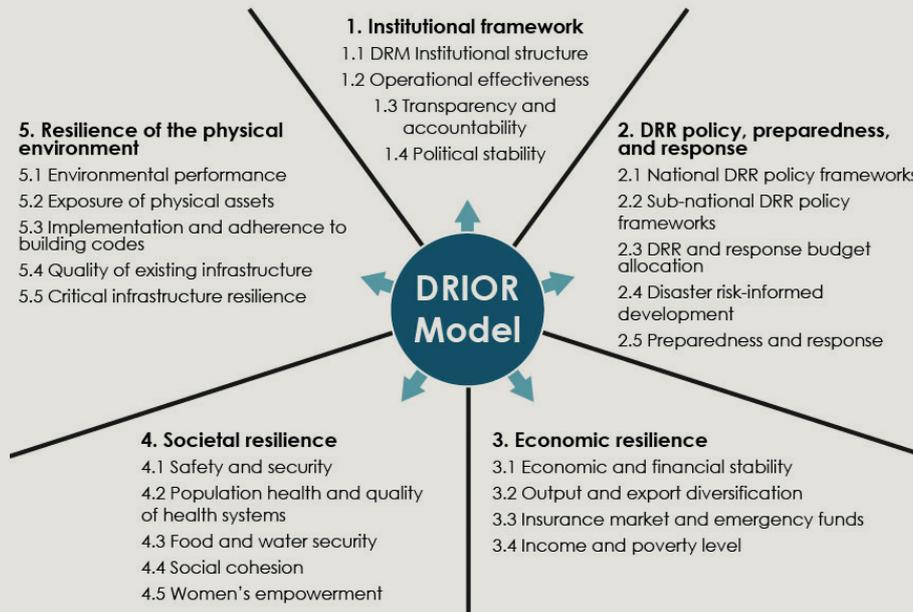
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THE DISASTER RISK-INTEGRATED OPERATIONAL RISK MODEL



The Disaster Risk-Integrated Operational Risk Model presents the methodology and key findings of a policy-benchmarking framework that assesses country-specific policies and institutions for disaster-risk management. The report is in response to a global shift towards improved disaster risk management; a growing number of countries have national agencies tasked with monitoring natural hazards as well as national contingency measures enshrined in their laws or strategic plans.

The Disaster Risk-Integrated Operational Risk (DRIOR) Model is the first risk assessment tool to mainstream disaster risk into operational risk and provides a new perspective to both policymakers focused on improving disaster risk management capabilities and business leaders looking to expand into new markets and needing to assess their risk levels.

The development of the DRIOR model has generated insight into common trends and differences between the 20 countries that are included in this pilot. The findings of the report underline the importance of investment in

infrastructure, steps to protect ecosystems and human health as well as preventive and corrective measures and contingency planning. Key findings include but are not limited to the following:

- Governments are increasingly recognising the critical role disaster preparedness plays in protecting countries against the effects of extreme weather events; policy emphasis is shifting from disaster response to disaster preparedness.
- Countries with better preparedness face lower levels of disaster risk, irrespective of their geographic exposure to extreme weather events.
- The resilience of the physical environment dictates much of a country's overall disaster risk preparedness, stressing the importance of investment in infrastructure and planning.
- The DRIOR model was commissioned by the United Nations Office for Disaster Risk Reduction (UNISDR) and produced by the Economist Intelligence Unit (EIU).

Download document:
www.unisdr.org/we/inform/publications/51068

principles of 'build back better' and climate smart initiatives are incorporated into all rehabilitation and reconstruction activities. These principles and initiatives ensure that in the reconstruction and rehabilitation of damaged infrastructure, consideration will be given to the design and implementation of robust infrastructure to build a more resilient Garden Route. The coordination of all disaster-related activities is managed through the Infrastructure Work Stream, which is one of seven work streams coordinated under the GRRI and focusses on rebuilding, amongst other things, critical infrastructure for municipal services ie water, electricity and sewerage, roads and municipal buildings.

Because of the magnitude and severity of this disaster, this incident was classified disaster by the National Disaster Management Centre endorsed by the Premier of the Western

Cape as a provincial state of disaster by means of a cabinet resolution in terms of the Disaster Management Act on 16 August 2017.

The declaration of the provincial state of disaster will assist the vulnerable communities to effectively deal with the disaster by ensuring that much needed resources are made available to counter socio-economic hardships and to rebuild their communities.

Avian influenza
 Several cases of avian influenza were also reported in certain areas of the Western Cape affecting chickens, ducks and ostriches. The Provincial Department of Agriculture and the relevant stakeholders are currently monitoring the outbreak of avian influenza in the poultry industry.

BUILDING RESILIENCE: HOW TO TALK TO CHILDREN?

By Dr Cindé Greyling, Communication, education and disaster management consultant, UFS/DiMTEC

The modern world is informationally spoilt. Overfull, so to speak. The availability of information is not the problem, the packaging is. People don't pay attention to information that is not palatable to them. Have you recently tried to read something written in a language you cannot understand? There is no point, is there? Probably the very same sentiment kids have about information that they cannot digest.

Body

There was this kid at school with me. Unteachable, he was called. He was constantly in trouble and never did what he was told. I remember trying to let him copy my homework so that we could get through at least one lesson without him being scolded at. He turned down my offer with a smirk remark about "not wanting to catch nerd flu"... or something to that extent. Whenever it was his turn to read aloud in class, he would start to recite swearwords until the teacher sent him out.

It turned out that he was dyslectic, coupled with some other learning issues and problems at home. It was impossible for his eyes to create words from the "ants running on the page" and his empty tummy did not help. His acting out at school, was also a reflection of the example he got at home. He knew no better and he saw no better.

I've always wondered what happened to that boy after he left our school...

That experience and many more to come, fuelled an interest in communication. How does it work? When does it work? What would the effect be if people truly understood what one another said? As I matured, I realised what a huge destruction misunderstanding can be.

A career involving education and journalism, almost naturally ignited an interest in disasters. What if people knew better; would the destruction be less? What if they got

the message in time, would the outcome have been different? Soon a PhD, trying to figure out a way to inform children about disaster resilience, was taking shape.

Diving head on into the world of 'child talk' delivered some very interesting outcomes. Ultimately, a combination of education and marketing knowledge seemed to disclose the secret formula of talking to kids. Who better to give insight into children's communication preferences than those trying to teach them and those trying to get money from their parents!

The most cost effective and manageable way to ensure foundation phase children's attention and retention seemed to be colourful, picture book stories, written in words that they themselves can read. The study goes to great lengths explaining how these visual and textual cues could be packaged to arrive at the desired



Dr Cindé Greyling

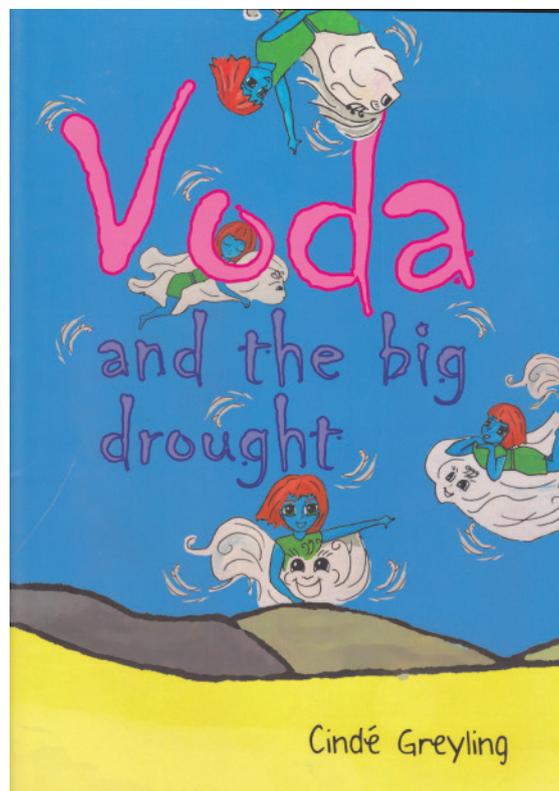
Photograph by Sumarie de Klerk

results. And would you know, the small sample of foundation phase children who participated in the study did indeed pay attention to and remembered the drought risk reduction picture book story presented to them. Up to seven months after being exposed to the picture book, they remembered to use less water, plant water wise food and store rainwater.

Of course, there could be other contributing factors like overhearing adult conversations about the current crippling drought and so forth. But a controlled trial in the Seychelles also found strong support that children retain environmental education and that it can even be transferred between generations; children who received wetland-related environmental education, influenced household behaviour.

This is good news for disaster management. Not only does it seem as if children, a vulnerable group, can become more resilient with risk information that they understand but it also seems to have a ripple effect. Audience appropriate communication may be able to assist disaster management in ways not always considered before.

Oh, and that troubled boy in my school? Apparently, he got the special support he needed to read and learn, coupled with caring foster parents and turned out just fine.



Cover of the picture book 'Voda and the big drought' that was developed for the PhD study: A narrative communication approach towards drought resilience for Foundation Phase children, by Cindé Greyling

Full thesis and more information available from the author: cindegreyling@gmail.com

CHANGING CLIMATE, CHANGING RISK

By Jeanne-Marie Strauss, JM Strauss Consulting

Ryan Heydenrych, Greg Forsyth, Dr Christopher Jack, Rodney Eksteen, Mark Pluke, Etienne du Toit (convener) and Dr Philip Frost



Peter Keuck, Trevor Balzer, Dr Johan Malherbe and Nabeel Rylands chairperson for the DMISA Western Cape Region

The Western Cape Disaster Management Centre (WCPDMC), in collaboration with Santam, JM Strauss Consulting, SAWS and Western Cape DMISA held a two day Western Cape risk symposium themed 'Changing climate, changing risk'. The event was held on 31 July 2017 to 1 August 2017 at the Sanlam head office in Bellville, Cape Town. Day one focused on two relevant topics, fires and drought while day two focused on floods followed by the Western Cape Disaster Management Institute of Southern Africa (DMISA) annual general meeting (AGM).

The risk symposium brought government representatives, disaster risk practitioners, leading academic scientists, researchers and research scholars from the Northwest University, Stellenbosch University, the University of Cape Town and the University of the Free State together to explore and discuss opportunities and strengths related to disaster risk reduction within a changing climate.

Speakers shared their experience and best practices on their work to promote and improve disaster risk reduction

efforts. Furthermore, each session of presentations was followed by panel discussions answering questions and offering practical suggestions. An important aim of this risk symposium was to offer networking opportunities and foster debate among the +150 attendees from all over the Western Cape and South Africa.

Day one

The keynote speaker, Dr Christopher Jack of the Climate Systems Analysis Group (CSAG) at the University of Cape Town (UCT) highlighted that we need a new form of engagement between the science and society where we should attempt to reduce uncertainty through consensus and be happy with the paradox.

The morning session of day one was dedicated to fire with speakers from the Western Cape Disaster Management Centre, Rodney Eksteen, who spoke on, 'Preventing fire deaths in human settlements', Mark Pluke of the City of Cape Town who presented a Case study on the IMizamo Yethu Fire of 11 March 2017, Dr Philip Frost of the Council for Scientific and Industrial Research (CSIR) who discussed Advance Fire Information System (AFIS) in support of recent fire events, Greg Forsyth who presented on 'Veldfire risk to communities living in the wildland-urban interface' and Vulcan Wildfire Management's Ryan Heydenrych who's presentation featured 'Case study of Knysna and Plettenberg Bay wildfires: Lives and homes lost....What is the appropriate response?'.

The afternoon session of day one was dedicated to drought with speakers from University of Cape Town, Prof Stephanie Midgley, who spoke on 'SmartAgri: Climate change, drought and agriculture – proposed responses for disaster risk reduction', Trevor Balzer of the National Department of Water and Sanitation who discussed the 'Impact of the 2015/16/17 drought on water: The new normal', Peter Keuck of the Western Cape Department of Agriculture who presented on 'FruitLook, providing near-real time data to farmers on actual crop water use to mitigate the impacts of climate change' and Dr Johan Malherbe of the Council for Scientific and Industrial Research ARC who's presentation featured the 'Drought in the Western Cape and the projected future trend'.

Day two

The morning session of day two was dedicated to floods with speakers from Aurecon, Lloyed Fisher-Jeffes who discussed 'The effect of climate change on the floods and adaptation options for disaster risk reduction in South Africa', the CSIR's Dr Melanie Luck-Vogel who spoke about 'Coastal flood risk', Dr Eugene Poolman of the South African Weather Service (SAWS) who's presentation featured 'Responding to flood risk within a changing climate' and (Francis Hoets of Disaster Management Solutions who discussed 'Community based early warning systems sand disaster management'.

The late morning session of day two was dedicated to a brief annual general meeting (AGM) of the Western Cape DMISA Region. Dr Johan Minnie provided an update on the professionalisation of disaster management to DMISA stakeholders.

While this symposium was held in the Western Cape Province, a plethora of ideas were discussed and presentations discussed the changing risks in a national context and globally. After everything has been said by academics and even politicians, purposeful action depends on the practitioner in the field, the bakkie, the control centre, the office as multi-agency



Lloyed Fisher-Jeffes, Dr M Luck-Vogel, Nabeel Rylands, Francis Hoets and Dr Eugene Poolman

coordination as it is in everyone's interest to build resilience and ensuring purpose in action.

Nabeel Rylands, chairperson for the DMISA Western Cape Region, emphasised that the objective of the risk symposium was to stimulate disaster risk dialogue and foster more regular topical dialogues.

Following the risk symposium, an online survey was circulated to identify improvement opportunities for future events and to stimulate inclusive DMISA membership. 🌐

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CITY OF ETHEKWINI UNVEILS FIRST EMERGENCY COMMAND VEHICLE, KWAZULU-NATAL



eThekweni Disaster Management And Emergency Control's first emergency command vehicle

In an effort to prioritise the safety and security of eThekweni residents, the municipality's disaster management unit has launched an emergency command vehicle. The high-tech vehicle, which is the first of its kind in KwaZulu-Natal, will provide rapid response to major disasters in the eThekweni region and surrounding areas when required.

The deputy city manager for community and emergency services unit, Dr Musa Gumede, said the vehicle has a long range camera enabling it to zoom in on incidents happening at least five kilometres away. "If you are in an area where disaster has struck, like emergency incidents, the vehicle can monitor the situation and direct assistance. The command vehicle accommodates six operators and the screens installed in the operations section monitors the development of the disaster or incident being managed," Gumede explained. The vehicle is equipped with an automated lighting system and is fitted with an external public address (PA) system for communication with the public and municipal officials on the field.

Overview of command vehicle

A major incident is any emergency that requires the implementation of special arrangements by one or all of the emergency services and/or other

local authority service units and other external agencies. The agencies that respond to such incidents, establish a forward command post (FCP) in a safe location close to or at the scene of incident. Operational activities are managed from the FCP, as senior staff from the respondent agencies coordinates their respective staff and equipment resources.

The command staff should work in close cooperation and form a multiagency, unified command team. This facilitates joint decision making and formulating tactics and implementing incident management in a coordinated manner. The importance of this joint control function should not be underestimated. The benefits of unified command have been demonstrated and are an integral component of all incident management systems. If the incident escalates to the point that it requires the activation of the disaster operation centre (DOC), then such coordination at a lower level will ensure that the DOC can optimally function at a strategic level.

The application of incident management is firmly entrenched in the eThekweni Metropolitan Council and the city realised that it required a single vehicle, designed for multiagency interoperability and which could accommodate staff from different agencies. This will enable

the incident commander in conjunction with the incident management team, to develop an incident management plan that includes:

- A mission statement of what is to be achieved and a strategy of how it is to be achieved
- Joint decision making and assignment of task to response services
- Logistics and administrative details and communications instructions

The eThekweni Municipality Disaster Management multiagency command vehicle is the first of its kind in KwaZulu-Natal. It has been built to provide the eThekweni region and surroundings a rapid response to major disasters and will serve as the main reporting and command centre for all disasters/major emergencies it is dispatched to manage. The command vehicle was built on a Mercedes Benz 1730 chassis with an automatic transmission and the body constructed using 3CR12 material. It is divided in four sections namely:

- Server room
- Operations, six dedicated operators can work comfortably, a small kitchen equipped with a fridge, microwave and sink with a tap and running water from tanks fitted on the command vehicle
- Boardroom, incident management team
- Access to the command vehicle is via a pneumatic stair case.

Below is a brief overview of the equipment installed on the command vehicle. The command vehicle's is powered by three generators when onsite and the operators have an option to switch from generator power to mains power when available via connected power solution.

Lighting mast

The command vehicle is equipped with six 1 000 Watt automated lighting system, which can be used for lighting up a disaster area. The lights rotate 360 degrees and 180 degrees. It is also equipped with LED emergency lights around the entire vehicle.

Satellite dish

The command vehicle is fitted with an auto-deploy satellite dish for connectivity and for streaming camera

DISASTERS, WILDFIRES AND FOOD SECURITY

By Malcolm Procter, deputy director: Forestry Regulation and Oversight,
Department of Fisheries and Forestry (DAFF)

*Disasters create poverty traps
that increase the prevalence of
food insecurity and malnutrition*

Disasters and food insecurity are directly interconnected as disasters destroy agricultural, livestock and food processing infrastructure, assets, inputs and production capacity. Food security is critical for the well-being and survival of human kind. In South Africa, food security is a key to the survival of the 54 million people that are citizens of this country. This is the reason why it found expression as a basic right in the

Constitution, which is the supreme law of this country. Thus the attainment of food security at both national and household levels is protected under the Constitution.

Natural disasters interrupt market access, trade and food supply, reduce income, deplete savings and erode livelihoods. Economic crises such as soaring food prices reduce real income, force the poor to sell their assets,

decrease food consumption, reduce their dietary diversity and access to safe and quality food. Disasters create poverty traps that increase the prevalence of food insecurity and malnutrition. In developing countries, the agriculture sector absorbs about 22 percent of the total damage and losses caused by natural hazards.

Population growth is occurring all over the world. The estimated world ▶

feeds from various centres around the eThekweni region. It is also fitted with a satellite dish for DSTV, which is used for weather reports and all live media monitoring.

Five mega pixel PTZ camera

The command vehicle is fitted out to accommodate a thermal camera and a five mega pixel pan-tilt-zoom camera (PTZ) camera on the mast installed at the front of the command vehicle.

Dedicated work stations

The command vehicle is fitted to accommodate six operators at six dedicated work stations with two way radio operability, cellular, landline and satellite telephones, and Wi-Fi. Two 55"inch touch screens installed in the operations section and one installed in the boardroom.

The on board data centre is fitted with the following equipment

- On board data equipment rack
- Switch connectivity
- Radio control connectivity
- DSTV solution
- Satellite control and connectivity

- On board telephony private branch exchange (PABX)
- Local on board firewall for systems security

Kitchen area

- Water dispenser
- Fridge
- Microwave
- Preparation counter

Exterior

The command vehicle is also fitted with two 42 inch screens on the outside of the vehicle for teams to be able to see the feeds back from the cameras and also has an external public address system for communication with the public and teams out in the field.

Human resources

The unit has trained staff to utilise the command vehicle, to set up the entire technology infrastructure and for the operators who will be managing the disaster/incident or event. Staff members from the following sections have been trained:

- Technical services
- Disaster management staff

- Emergency control
- State of readiness

Whilst the disaster management and emergency control unit will be the custodian of this vehicle, it is imperative to stress that this vehicle will be a city asset. In this regard it is not just the emergency services, which will benefit but other supporting services, council departments and external agencies will be able to better coordinate response and recovery operations in conjunction with us.

Mayor Zandile Gumede said, "It is of utmost importance to us that all our citizens enjoy the service provided by this innovation. That is why I am happy that the vehicle has been designed in such a way that it will be able to have access and be stationed in any area within eThekweni, including rural areas," she said enthusiastically. The vehicle will not only be used during emergencies but will also be used as a joint operations centre when the municipality hosts big events in areas where there are no closed-circuit television cameras. 🇿🇦



In developing countries, the agriculture sector absorbs about 22 percent of the total damage and losses caused by natural hazards

► population is expected to reach 8,9 billion by 2050 having increased by almost 50 percent since 2000. In this context, Africa will contribute only around 20 percent to the total world population. The population on the African continent is growing rapidly. For the period from 2000 to 2050 eight of the ten countries with the highest average annual growth rate in the world are African. The Food and Agriculture Organisation's (FAO) 2013 report on the state of food insecurity in the world, estimates that at least 840 million people, which is 12 percent of the global population, were unable to meet their dietary energy requirements in 2011/13. Thus, one in nine people worldwide has insufficient food for an active and healthy life. The vast majority of the chronically hungry, 827 million, live in developing countries, where the prevalence of undernourishment in 2011/13 is estimated at 14,3 percent.

Until 2055, 18 out of the 20 countries with the highest total fertility are located in Sub-Saharan Africa. Nigeria as an example is projected to have the third largest population growth in the world from 2000 to 2050. Already now Nigeria is in the top ten of the most populous countries on the planet and expected to climb in the top five in the course of this century. All these are indicators for the

enormous ongoing population growth in Africa and they point to the most important fact: The population on the African continent is expected to double from around one billion to almost two billion over the next 40 years.

Africa as a whole is going to face two major problems in the 21st Century. The first problem is how to feed the growing population of the continent; the second is how to adapt to climate change. The major challenge to food security in Africa is its underdeveloped agricultural sector that is characterised by over-reliance on primary agriculture, low fertility soils, minimal use of external farm inputs, environmental degradation, significant food crop loss both pre- and post-harvest, minimal value addition and product differentiation and inadequate food storage and preservation that result in significant commodity price fluctuation. Ninety five percent of the food in Sub-Saharan Africa is grown under rain fed agriculture. Hence, food production is vulnerable to adverse weather conditions. There is an overall decline in farm input investment including fertilisers, seeds and technology adoption. Whilst South Africa is not regarded as a country prone to food security, we have the potential for exports.

A clear understanding of the particular way in which the agriculture sector is affected by disasters, is crucial to protect development investments and strengthen the sector's resilience to disasters. Yet, the economic impact of disasters on the agriculture sector is not known at the global or regional levels. This is largely because the impact of disasters is not collected and reported in a systematic way by sector at the national or subnational levels. In the aftermath of disasters, many countries conduct needs assessments involving sectoral ministries in order to inform the humanitarian response.

The livestock sector is one of the most dynamic parts of the agricultural economy. Livestock make a vital contribution as generators of cash flow and economic buffers, provided that market chains are organised to provide openings for small scale producers and traders and those in remote areas. Livestock provides sources of employment, income, quality food, fuel, draught power and fertiliser. Cattle producers maintain grazing land, which can include open space, woodlands, grass, trees, forests, plains, mountains, valleys and lowlands.

Grazing is best used when addressing the smaller diameter vegetation that ►

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**FIRE AND RESCUE
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In developing countries, the agriculture sector absorbs about 22 percent of the total damage and losses caused by natural hazards

► makes up the one and 10-hour fuels. One-hour fuels are those fuels with a moisture content that reaches equilibrium with the surrounding atmosphere within one hour and are less than six millimetres in diameter. Ten-hour fuels range from six to 25 millimetres in diameter. Grazing can impact the amount and arrangement of these fuels by ingestion or trampling. Prescribed grazing has the potential to be an ecologically and economically sustainable management tool for reduction of fuel loads. Heavy grazing for a short duration removed more than 80 percent of the herbaceous biomass but affected the regeneration rate of shrubs for only two years.

The global land area available for grazing is close to its biological limit for production under the prevailing climatic and soil fertility conditions, putting pastoralist systems under pressure. There has been an expansion of 9,6 percent in the world's agricultural land area over the last 50 years with increases in both arable land and permanent crops (9,6 percent) and permanent meadows and pastures (8,7 percent). However, this increase occurred over the period 1961–1991 and since then, the total area has been static. In addition to this there is ongoing urbanisation of agricultural land, so new land must be brought into production just to maintain the existing area of agricultural land.

Meat production growth is driven by a combination of increases in economic activity that results in increased purchasing power coupled with population growth that increases the number of consumers. Projections of growth in global GDP and population through 2050 strongly suggest that

there will be substantial increases in meat production requirements over the next 45 years. The increases are large enough to cause concern over the level of agricultural resources required to produce the projected levels of production.

To support the higher animal product production level of 2050, it is required that feed crop yields will need to more than double if we are to increase meat production in line with increases in GDP and population that will almost certainly happen over the next 33 years. To achieve this level of yield increases implies that agricultural research aimed at increasing feed crop yields should be a high priority. Increasingly, the land brought into agricultural use is in less-developed areas and in marginal regions with lower fertility and where there is a higher risk of adverse weather events than in more established agricultural production regions. The area available for extensive grazing is unlikely to expand because of competition from agriculture and biofuel, human settlement and nature conservation.

Failure to substantially increase crop yields in line with the meat production projections will result in increased pressure to push crop production onto more of the world's fragile lands that are not being farmed today. If feed crops production is pushed onto marginal land, the result will be a degraded environment, increased soil erosion, increase water pollution, reduced wildlife habitat and increased use of chemical and fertiliser inputs.

The effect of wildfires on food security in figures

To illustrate the effect of wildfires on food security consider these figures:

In 2014 the Free State burnt 422 258ha. The stocking rate: Free State (cattle) = one cow/6ha
2014; 422 258ha burnt = 70 376 head of cattle could have been fed.

The dressed slaughter weight of 280 kilogram per animal, implies that 19 702 580 kilograms of meat could have been produced.

An adequate portion of meat is 250 grams = 78 821 120 meals lost.

The South African population at 54 million = a loss of 1,46 meals for every South African.

The Disaster Management Act states that the situation should be regarded as being in the same condition as it was before the incident, therefore a resting period of two years for grass to fully recover is required,

= 2x 78 821 120
= 157 642 220 meals lost.

Dependant on the time of burning a more realistic figure may be to consider lightly grazing after four months, this would imply (422 258ha x1/3) = 140 752ha

Therefore, 140 752ha at stocking rate of six large animals per ha = 23 458 head of cattle could have been fed this equates to: 26 272 960 meals.

Accounted differently

A stocking rate of 1/6 hectare = 280 kg/6 = 46,67kg hectare
46,67kg hectare in 250 gram portions = 187 meals lost for every hectare lost to wildfires in the Free State.

The stocking rate in Mpumalanga and KwaZulu-Natal is in the vicinity of 1/1 exacerbating the loss of grazing by wildfires six times worse than that in the Free State Province.

The only environmentally responsible way to accommodate the world's increasing demand for meat, is to produce increased amounts feed crops without using more land. The only way to accomplish that is to substantially increase yields. With no more and perhaps less productive farmland available over the next 50 years, this projected growth in meat production represents a major challenge to both farmers and the environment. More meat means more feed and forage will need to be produced and more land will be required for housing the additional animals that will be on farms. In addition, more production of all crops and less uncontrolled fires will be needed, including those used for direct human consumption and for industrial uses. 🇿🇦

AFTER DISASTER STRIKES, SCIENCE OFTEN BENEFITS

Every day, it seems as though there's a new natural disaster in the headlines. Hurricane Harvey inundates Texas. Hurricane Irma plows through the Caribbean and the US South and Jose is hot on its heels. A deadly earthquake rocks Mexico. Wildfires blanket the US West in choking smoke.

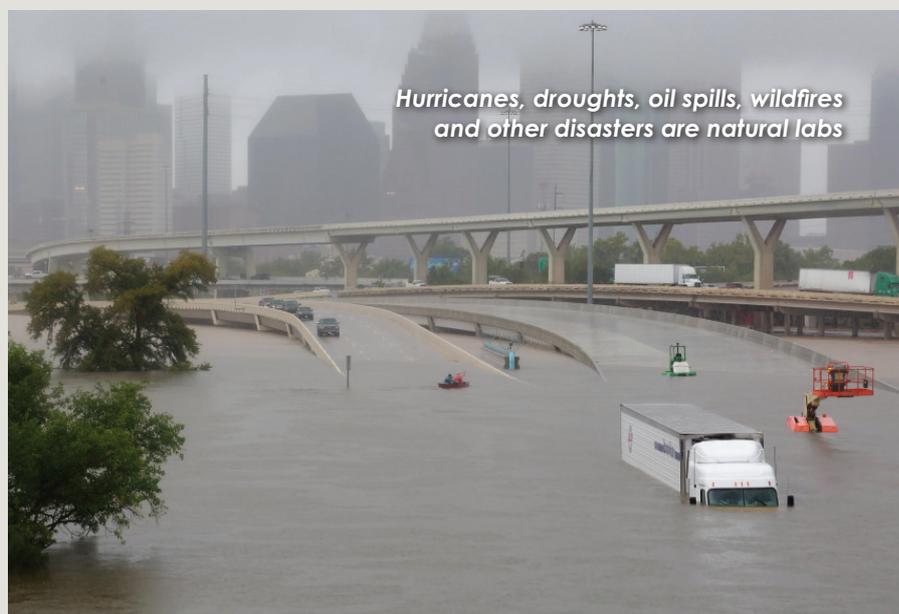
While gripping tales of loss and heroism rightly fill the news, another story quietly unfolds. Hurricanes, droughts, oil spills, wildfires and other disasters are natural labs. Data quickly gathered in the midst of such chaos, as well as for years afterward, can lead to discoveries that make rescue, recovery and resilience possible in future crises.

So when disaster strikes, science surges, says human ecologist, Gary Machlis, of Clemson University in South Carolina. He has studied and written about the science done during crises and was part of the Interior Department's Strategic Sciences Group, which helps government officials respond to disasters.

The science done during Hurricane Harvey is an example. Not long after the heavy rains stopped, crews of researchers from the US Geological Survey (USGS) fanned out across Texas, dropping sensors into streams. The instruments measure how swiftly the water is flowing and determine the severity of the flooding in different regions affected by the hurricane. Knowing where the flooding is the worst can help the Federal Emergency Management Agency and other government groups direct funds to areas with the worst damage.

In the days leading up to Irma's US landfall, USGS scientists went to the Florida, Georgia and South Carolina coasts to fasten storm-tide sensors to pier pylons and other structures. The sensors measure the depth and duration of the surge in seawater generated by the change in pressure and winds from the storm. This data will help determine damage from the surge and improve models about flooding, which may help show where future storm waters will go and who needs to be evacuated ahead of hurricanes.

Even as Irma struck Florida, civil engineer Forrest Masters of the University of Florida in Gainesville, accompanied by students



and collaborators, travelled to the southern part of the state. As winds blew and rain pelted, the team raised minitowers decked with instruments designed to measure ground-level gusts and turbulence. With this data, the researchers will compare winds in coastal areas, near buildings and around other structures, with the goal of helping government agencies assess storm-related damage. The team will also take the data back to Natural Hazards Engineering Research Infrastructure labs at the university to study building materials and identify those most resistant to extreme winds.

"Scientists want to use their expertise to help society in whatever way they can during a disaster," says biologist Teresa Stoepler, who was a member of the Strategic Sciences Group when she worked at USGS.

As a former science and technology policy fellow with the American Association for the Advancement of Science, Stoepler studied the science that resulted from the 2010 Deepwater Horizon incident, in which the explosion of an oil rig spewed 210 million gallons of petroleum into the Gulf of Mexico. This accident also opened the door for scientific research. Biologists, chemists, psychologists and other scientists wanted to study the environmental, economic and mental-health consequences of the disaster; local scientists wanted to study the effects of the spill on their communities;

and leaders at the local and federal government needed guidance on how to respond. There was a need to coordinate all of that effort.

That's where the Strategic Sciences Group came in. Officially organised in 2012, it brought together researchers from federal, academic and nongovernmental organisations. The goal was to use data collected from the spill to map out possible long-term environmental and economic consequences of the disaster, identify where further research needed to be done and help determine how to allocate money for response and recovery efforts.

Not long after its formation, the group had a disaster to respond to, Hurricane Sandy devastated portions of the East Coast, even pushing floodwaters into the heart of New York City. Scientific collaborations allowed researchers and policymakers to get a better sense of whether wetlands, sea walls or other types of infrastructure would be best to invest in to prevent future devastation. The work also gave clues as to what types of measurements, such as the height of floodwaters, should be made in the future, say during storms like Harvey and Irma, to speed recovery efforts afterward.

They are likely to see similar collaboration time and time again. No doubt, more natural disasters loom. And other groups are getting into crisis science. ▶

WHERE DO RATS MOVE IN AFTER DISASTERS?



Post-Hurricane Katrina research aims to provide communities better data on rodent populations, dangers. Imagine you're a researcher working outdoors in a New Orleans summer. It is a 100 degrees Fahrenheit and you're going door-to-door in neighbourhoods where people have grown tired of being studied by outsiders in the decade since Hurricane Katrina. And in the best-case scenario, on a very good day, you wind up handling a bunch of disease-carrying rats.

That's what Tulane University molecular ecologist, Michael Blum and his research team do and have done for six months in each of the last three years. The work may sound unpleasant but Blum says it's laying the groundwork for a potentially powerful tool in disaster relief: a mathematical model that could simulate how environmental changes, natural or man-made, affect populations of rodents that carry pathogens hazardous to human health.

Support for this endeavour comes from the National Science Foundation's (NSF) Dynamics of Coupled Natural and Human

Systems Program, which is managed by NSF's directorates for Social, Behavioural and Economic Sciences; Geosciences and Biological Sciences.

"The research would allow you to ask questions that could apply to very specific areas, like 'If you knocked this city block out, how would it affect movement of rodents from one neighbourhood to the next,'" Blum said. It would also allow for smarter public policies based on data that show where rats likely are living, not on assumptions about where they might be found.

"Where are the rats?" Blum said. "What's the risk of contact? Those are factors that are driven by human behaviours and those behaviours depend on risk perception."

Risk perception is incredibly important. It drives personal decisions and government action. In a sense, it doesn't matter where the rats are, so much as where people think they are.

Researchers have long known that human behaviour, from where people live

to how they dispose of trash, affects rat populations. But there's been scant data to show how those relationships play out.

If policymakers perceive that the highest risk of rodent infestation is in areas most densely populated with humans, they will concentrate countermeasures in those places. But, what if that perception is based on an incorrect assumption or if there are more variables in play? The type of data these researchers are generating can bring such perceptions in line with the facts.

Challenging conventional beliefs

Why are rodent populations and their movements, so important after disasters? Because events like Hurricane Katrina can change the ecology of a particular area, making it more favourable to rats and other vermin. At the same time, they can curtail some of community services that can keep pests in check.

Strong contrasts in environments help scientists understand factors that drive change in something like a rodent population and post-Katrina New Orleans provided plenty of contrasts. Blum's team examined the differences between flooded and dry areas, and populated and depopulated areas. "There aren't a lot of places in the country with night-and-day environments like this after a catastrophe," Blum said.

For hundreds of years, humans worried about rats as agents of disease and the last century has resulted in a rich body of research on the rodents. But, Blum said, that work tended to focus on how rats interact with their physical environments, not so much on how their lives overlap with humans living in the same areas.

Work by Blum's team has helped fill in that gap and challenged a few previous assumptions about rodent populations.

For one, a common belief says that greater human population density equals

► For instance, Stanford University, with its Science Action Network, aims to drive interdisciplinary research during disasters and encourage communication across the many groups responding to those events. And the Disaster Research Response program at the National Institutes of Health provides a framework for

coordinating research on the medical and public health aspects of disasters and other emergencies.

Surges in science will stretch from plunging into a crisis to get in-the-moment data to monitoring years of aftermath. Data collected a year, three years or even five years after a disaster

may reveal gaps in the science and how those can be avoided in future events.

The more data collected, the more discoveries made and lessons learned, the more likely we'll be ready to face the next disaster.

Source: Science News 🌐

more rats. But that doesn't match current findings, Blum said. Researchers found that when humans abandoned spaces, the rats moved in. And the conditions of those spaces mattered, a block of abandoned but maintained houses attracted smaller rodent populations than equivalent areas with overgrown lawns and other upkeep issues.

"There is a relationship between population density and rodent densities here," Blum said. "But it's an inverse one. We're finding hotspots in the city associated with abandonment."

Another early finding deals with the type of risks rat populations present to humans. Blum's team focuses on harmful pathogens rodents might carry and make people sick.

Leptospirosis is a bacterial infection that can result in symptoms ranging from headache to kidney failure and bleeding from the lungs. Humans become infected by drinking or swimming in water tainted by rodent droppings that carry the pathogen. "If it goes undiagnosed, it can kill you," Blum said.

Among US states, only Hawaii considers the disease a likely threat to public health; notices posted at Hawaii's freshwater ponds, waterfalls and streams advise people of the risk. Otherwise, the disease is mostly considered a problem in the developing world, particularly in tropical areas.

But, Blum and his team's findings deviate from the conventional wisdom. "If you look, it's actually prevalent across the New Orleans landscape," he said. In some areas, up to 30 percent of rats carry the pathogen.

When combined, those two findings, how human behaviours affect where rats actually live and the diseases rats carry, illustrate how the researchers' findings could help protect areas after disasters. The team's findings could provide a factual basis for risk perception.

The 'Rodent-trapping team'

Much of the research team's work involves analysing rodent data gathered from other sources. The scientists have call logs to city services reporting rodent sightings that show a steady decline from a high in 2006. "Either people are seeing fewer, or they've gotten used to them," Blum said.

The researchers used those logs as a starting point for their work nearly nine years ago. But getting the best data on the current rodent population and pathogen levels requires getting out



Members of the research team tested the trapped rats, finding the rodents carried pathogens including Leptospirosis, a bacterial infection that can result in symptoms ranging from headache to kidney failure and bleeding from the lungs. Humans become infected by drinking or swimming in water tainted by the droppings of rodents that carry the pathogen. Credit: Centre for Bioenvironmental Research, Tulane University

into the field, which poses a challenge in post-Katrina New Orleans, which saw a steady stream of scientists and engineers come through after the hurricane. "These communities are very well-researched and they're not exactly eager to be studied again," Blum said.

To help gain residents' trust and cooperation, the researchers run an operation that is deeply embedded in the community. Many of the project's researchers and workers are from New Orleans. They don "Rodent-Trapping Team" t-shirts with big rat logos on the front and go door-to-door explaining

what they're doing and asking for access to yards and other private spaces.

That's just one step in the process, though. Rats, as it turns out, are incredibly smart and difficult to trap. On occasion, the researchers experiment with baits and methods to catch rats but mostly they put in time. For three months in the summer and three months in the winter, they trudge through study areas collecting traps, baiting new ones and collecting data.

And, in this research environment, it's cause for celebration when they find a rat. 🐀

RODENT BEHAVIOUR POST DISASTERS

Rats and mice are destructive pests that can spread disease, contaminate food, and destroy property. After a disaster, the number of rats and mice is often reduced, so illness or injuries associated with rats and other small rodents are uncommon in the short term.

Rodents that survive a disaster often move to new areas. It will take time for rodents to regroup, reorganise their social behaviour, become familiar with their new environment, find safe haven, locate food and water and memorise their movements. Colony building and reproduction will begin only when their new ecosystem has stabilised. This typically takes six to 10 months under favourable conditions. As the rodent population grows and resettles, people have a greater chance of being exposed to the diseases carried by

rodents. Rodent urine and dander also contain allergens that can cause allergic reactions or trigger asthma symptoms in sensitive persons and more than 9 000 persons are treated in emergency departments annually for rat or mouse bites in the US.

Indications that rodents are present—aside from seeing either live or dead ones—are rodent droppings, runways, rub marks, and tracks. Other signs include burrows, nests, gnawings, food scraps, rat hair, urine spots, rodent noises, insects that are associated with rodents, odours from urine, or dead rodents. Rats and mice are different animals and methods used to control them will differ.

Source: Centres for Disease Control and Prevention, USA

UPCOMING EVENTS

SEPTEMBER 2017 - NOVEMBER 2017

19 – 22 September 2017

Dealing with Disasters Conference 2017

The aim is to bring together practitioners, researchers, humanitarian agencies and hazard managers to present and discuss the latest understanding and challenges around managing hazards and surviving disasters. For this event, broad interpretations of hazard, risk and resilience will be considered in keeping with demands for new strategic developments in this field globally, regionally and locally.

Venue: Durham University Science Site, Durham, UK

For more information visit:

<https://www.unisdr.org/we/inform/events/54345>

25 – 26 September 2017

ICDEM 2017 – 19th International Conference on Disaster and Emergency Medicine

The ICDEM 2017: 19th International Conference on Disaster and Emergency Medicine aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of disaster and emergency medicine.

Venue: London, United Kingdom

For more information visit:

waset.org/conference/2017/09/london/ICDEM

27 – 28 September 2017

Disaster Management Institute of Southern Africa (DMISA) Annual Conference

The Disaster Management Institute of Southern Africa (DMISA) annual conference. This year's theme is 'Back to basics through resilience, design and innovation: Purpose in action'.

Venue: Coega Vulindlela Accommodation and Conference Centre, Port Elizabeth

For more information contact: Karin Muller, Tel: 011 822 1634 or email: Karin@disaster.co.za

27 – 28 September 2017

The Flood Expo 2017

The Flood Expo boasts over 100 seminars, led by world-renowned experts from the NASA's Risk Reductions and Response Program; the United Nations Climate Change Secretariat; the Met Office, and the MOD.

Venue: Excel Exhibition Centre, Sandstone Lane, London, United Kingdom

For more information visit:

<https://www.unisdr.org/we/inform/events/54764>

12 – 13 Oct 2017

3rd Disaster Risk Reduction Conference, Warsaw

The 3rd Disaster Risk Reduction aims to bring together leading academic scientists, researchers and young researchers to share their experiences, results and questions about all aspects of disaster risk reduction.

Venue: Krakowskie Przedmie cie 30, Warsaw, Poland

For more information visit: <http://www.drr.uw.edu.pl/>

13 October 2017

International Day for Disaster Reduction

The UN General Assembly sees International Day for Disaster Reduction as a way to promote a global culture of risk-awareness and disaster reduction. That includes disaster prevention, mitigation and preparedness.

23 – 25 October 2017

Africa Conference on Economic Costs of Disasters 2017

The conference, with a focus on the Role of the private sector in disaster risk reduction, will be the first continental conference in Africa to focus exclusively on the active involvement of the private sector in DRR.

Venue: Constantia Office Park 546 16th Road, Midrand

For more information visit: <http://gravitazacecd.com/>

29 October – 3 November 2017

SAESI Conference and Expo 2017

This year's theme is "Climate change and the emergency services" and will address issues pertaining to climate change and the impact thereof on the emergency services. The impressive speaker line up will feature international and local presentations providing a great networking forum for debate.

Venue: NASREC, Johannesburg

Contact Lee Raath-Brownie

Tel: 011 452 3135 Cell: 082 371 0190

Email lee@fireandrescue.co

For more information visit: www.saesi2017.com

6 – 17 November 2017

23rd Conference of the Parties (COP 23/CMP 13/CMA 1.2)

The 2017 UN Climate Change Conference will take place in Bonn, Germany, the seat of the Climate Change Secretariat.

The conference will be convened under the Presidency of Fiji.

Venue: World Conference Centre, Bonn, Germany

For more information visit:

http://unfccc.int/meetings/bonn_nov_2017/items/10068.php

7 – 10 November 2017

3rd World Congress on Disaster Management 2017

Revolving around the central theme of "Building Resilience and Adaptation for Sustainable Development" the 3rd WCDM-2017 will involve national and sub-national governments, scientific and technical organisations, academia, professional bodies, industry, civil society, practitioners, media besides the UN bodies and multi-lateral and regional organisations.

Venue: Vijaya Nagar Colony, Hyderabad, India

For more information visit: www.wcdm.info

27 – 29 November 2017

7th International Conference on Building Resilience

Using scientific knowledge to inform policy and practice in disaster risk reduction.

Venue: Swissotel Le Concorde, Bangkok

For more information email: Dr Ezri Hayat at e.e.hayat@hud.ac.uk

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to life



Aurecon applies advanced modelling and planning tools to the integrated management of scarce resources such as water. Our environmental baseline studies, spatial mapping and analysis of ecological systems on a regional scale inform city and regional environmental and development planning policies. Aurecon has extensive expertise in disaster risk and resilience management and management of natural resources such as water.

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