

DISASTER MANAGEMENT

Official Journal: Disaster Management Institute of Southern Africa



Volume 3 No 1

KNYSNA FIRES:

CONSOLIDATED REPORT FUNDED BY SANTAM



DISASTER RISK REDUCTION 2019

The internationally recognised annual Disaster Management Conference for Southern Africa.

Proudly presented in the scenic Garden Route District by the Disaster Management Institute of Southern Africa (DMISA), supported by Santam, the SA Weather Service (SAWS) and the South African National Disaster Management Centre (NDMC).



ADAPTING TO EXTREMES AND LIMITING DISASTER LOSS

PATHWAYS TO INTEGRATED RESILIENCE AND SUSTAINABILITY FOR BASIC SERVICES, CRITICAL INFRASTRUCTURE, AND THRIVING COMMUNITIES



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DMISA, the voice of the Disaster Management Profession and the SAQA approved professional body for Disaster Management proudly presents:

conference 2019 18 - 19 September

DRR 2019 will focus on reducing disaster damage to critical infrastructure and disruption of basic services aligning with the UNISDR Sendai 7 Campaign's Target 4 priority.



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Mduduzi Lancelot Nxumalo

Dear Reader

The Disaster Management Institute of Southern Africa (DMISA) delegation comprising of the President, Mr ML Nxumalo, Deputy-President, Mr OH Becker, Chairperson of the Executive Committee, Mr P Adams, EXCO member, Ms L Mosotho, EXCO member, Ms S Tsebe and Board member, Dr JA Belle, attended a workshop between the Disaster Management Authority (DMA) of Lesotho and DMISA on Wednesday, 31 July 2019 in Maseru.

Dr J Belle was the initiator of the workshop and it was planned and organised by the Chairperson of the Executive Committee, Mr P Adams and the Chief Executive Officer of the Disaster Management Authority of Lesotho, Mr H Mahosi. The delegation was led by the President of DMISA.

The DMA invited various stakeholders within Lesotho. The attendance register reflected 36 participants.

Lesotho, a landlocked kingdom encircled by South Africa, is crisscrossed by a network of rivers and mountain ranges. On the Thaba Bosiu plateau, near Lesotho's capital, Maseru, are ruins dating from the 19th-Century reign of King Moshoeshoe the first. Thaba Bosiu overlooks iconic Mount Qiloane, an enduring symbol of the nation's Basotho people. Lesotho is a democratic, sovereign and independent country formerly known as Basutoland and was renamed to the Kingdom of Lesotho upon independence from the United Kingdom (UK) in 1966. It is now a fully sovereign state that is a member of the United Nations, the Commonwealth

of Nations and the Southern African Development Community (SADC). Lesotho is vulnerable to hazardous events associated with climate such as drought, floods, strong winds, heavy snowfall and severe frost.

The Disaster Management Institute of Southern Africa (DMISA) met with Lesotho Disaster Management Authority to build relations. DMISA made a presentation to the Disaster Management Authority that included the following highlights: DMISA's intention broaden its membership beyond the SADC region and include international members, linking up with disaster risk reduction at the SADC region and other structures in East Africa with the result that DMISA would need to review its policy to be inclusive of these countries. It was also noted that DMISA represents the interests of practitioners and it intends to build upwards from there.

Recommendations were put forward for Lesotho Disaster Management Authority to consider:

- That the Lesotho Disaster Management Authority supports the call for professional registration of Disaster Management practitioners in Southern Africa.
- That the Lesotho Disaster Management Authority takes note of DMISA's efforts to support the discipline in partnership with the national authorities responsible for Disaster Management in Southern Africa.
- That the Lesotho Disaster Management Authority encourage the Disaster Management fraternity in Lesotho and Southern Africa to participate in the learning, networking, alignment and professional development opportunities provided by DMISA in partnership with the National Disaster Management Centre (NDMC) and other stakeholders.
- That the profession in Lesotho considers the use of the Disaster Management badge and encourages the general and standardised use of the emblem in Lesotho and Southern Africa going forward.
- That stakeholders within Lesotho attend DMISA Conferences.

The Lesotho Disaster Management Authority made a presentation providing a brief overview of Lesotho's disaster management. Their Act was promulgated in 1997: Lesotho: Disaster Management Act no. 2 of 1997. This act provides for the functioning of Lesotho's Disaster Management Plan, disaster



DMISA delegation and workshop attendees at the recent meeting in Maseru

reconstruction, rehabilitation and recovery plan, Disaster Management Authority, National Disaster Relief Task Force and district and village disaster management teams. Some of their challenges include cross border issues in case of major incidents such as fires that move across the border. This issue will be put forward to the National Disaster Management Centre to consider having drawing up a Memorandum of Understanding to be in a position to assist as and when instances like those arise.

The overall visit was very insightful, meaningful and informative.

On 7 August 2019, a letter was directed to Mr Haretsebe Mahosi, Chief Executive Officer of the DMA in Lesotho to again express our sincere appreciation for the excellent support and hospitality provided by him and his staff during our recent visit to Maseru.

His efforts to arrange stakeholders who fully participated, contributed substantially to the quality of the workshop.

Mr ML Nxumalo
DMISA President



Mr P Adams, Chairperson: EXCO, DMISA handed over a gift to Mr H Mahosi, CEO, DMA, Lesotho

DMISA EXCO AND BOARD MEMBER: JOURNAL AND MARKETING SHADI TSEBE

The latest climate change projections for South Africa indicate that the country's exposure to weather-related events, particularly floods, droughts, wildfires and storm surges, will increase into the 21st Century. Climate change is linked to almost all aspects of our society, particularly socio-economic progression as resources such as water, food, biodiversity, which, in turn, affect human development desires for the country. There is evidence that extreme weather events in South Africa are increasing, with heatwave conditions found to be more likely, dry spell durations lengthening slightly and rainfall intensity increasing. The associated impacts primarily have a bearing on economic and social aspects of our development.

With summer approaching, I'm sure most of the disaster management personnel are gearing up and coming up with contingency plans for the expected weather conditions. The summer season is characterised by adverse weather conditions, which results in flooding, strong winds, lightning and hailstorms that normally occur throughout the country.

On a positive note, the City of Cape Town received good rains over the month of August, the dam levels are looking much better than last year. The dams are over 80 percent, better still, the Capetonians are consuming less than what is the allocated amount and are remaining water-conscious and continue to implement water-saving efforts to reduce daily consumption.

On the other hand, Rand Water experienced a burst on its O2 pipeline that affected the following various parts of the City of Ekurhuleni ie Kempton Park (OR Tambo International), Isando Glen, Kempton Park ext, Van Riebeeck

Park and Spartan (as supplied by Rand Water). Other areas included Bedfordview, Alexandra, Wychwood, Primrose Hill, Dinwiddie, Windsor, Sunnyridge, Fisher's Hill, Primrose ext, Klopper Park, Knights Mine, Medley (Boksburg), Germiston Station, Spoornet East Industrial, Wadeville, Tembisa, Tembisa South, President Park, Halfway House Diepsloot, Rooihuiskraal and Kosmosdal. Linmeyer, Linmeyer ext 2 and Southcrest. Kempton Park as well as surrounding areas and immediately diverted supply to the O5 pipeline. The repairs required that a number of valves be closed in order for the pipeline to drain speedily, as well as to sure a safe working environment for technicians. The most worrying area was OR Tambo International, which couldn't afford not to have water. Everyone involved ensured speedy recovery of the affected areas and all areas received water supply with a short space of time.

Once again, I would like to remind the readers about the upcoming annual DMISA Conference that will take place



Shadi Tsebe

at the ATKV Resort Hartenbos in the Mossel Bay Municipality, Garden Route District in the Western Cape Province. We hope to see you all there!

I leave you with this: "Always dress for success, in body, mind and spirit"

Thank you

Ms Shadi Tsebe
DMISA EXCO and Board member:
Journal and marketing



FROM DISASTER RISK REDUCTION COMMITMENTS TO ACTION



Message by the Deputy Director-General: (Head) National Disaster Management Centre,
Dr Mmaphaka Tau

Thank you for the opportunity to pen down this message! This is particularly significant as it takes place at a critical era in the democratic evolution of South Africa marked by the ushering in of the sixth administration following the successful national and provincial elections held on 8 May 2019.

As I prepare to deliver the 2019 message, I elect to depart from two quotes, which I consider relevant for the context I will be addressing hereunder notably, “Success on any scale requires you to accept responsibility. In the final analysis, the one quality that all successfully people have is the ability to take on responsibility” Michael Korda.

I want to conceptually link the preceding quote with the one by Jarvis who stated that, “The only sane response to change is finding the opportunity in it”.

I thoughtfully chose these two quotes as my point of departure as I want to demonstrate how through hard work, professional wisdom, resoluteness and team approach, we can position the disaster risk reduction and management function at its rightful place to continue directing the development discourse, which it is truly meant for. The sixth administration has categorically determined seven clear development priorities that we must all rally behind

to take the country to sustainable trajectory characterised by the creation of jobs, the growth of the economy, unity and social cohesion within the context of environmental sustainability. We say this being mindful of the 17 sustainable development goals (SDGs), which boast 169 targets and 230 indicators. We are fully certain that disaster risk reduction is a cornerstone for achieving the SDGs hence the significance of localising the Sendai Framework for Disaster Risk Reduction 2015 - 2030.

In the context of the ‘Sendai 7 Campaign’, the year 2019 is dedicated to “substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030”.

In October 2018 the South African Government allocated R3,4 billion to deal with drought and storm consequences, including infrastructure damages that affected parts of our country.

These amounts are huge and beg a question: is it sustainable to continue in this trajectory in the presence of our world-renowned piece of legislation, the Disaster Management Act 2002?

The cost of disasters are clearly increasing and are similarly not unaffordable, calling



Dr Mmaphaka Tau

for heightened integrated measures to ensure prevention, preparedness, mitigation effective response and recovery for sustainable service delivery to all our people. This is made even more necessary given the abundance of evidence to the effect that a growing number of people in South African cities and towns will be exposed to the devastating impacts of weather-induced natural hazards such as flooding, heatwaves, droughts, coastal flooding, wildfires and storms that threaten livelihoods, increase vulnerability and undermine hard-earned development gains.

- 63 percent of South Africans already live in urban areas. This will rise to 71 percent by 2030.
- The South African population will grow by an additional 19 to 24 million by 2050.
- 8 in 10 South Africans will live in urban areas.
- Growing cities will also be impacted by global climate change and continued changes in extreme events (Green Book, 2019).

Processes such as urbanisation converge with climate risk in settlements, creating highly vulnerable spaces and communities. As the level of governance closest to the people, municipalities have to deal with these vulnerable spaces and communities (Pieterse, Van Niekerk and Du Toit, J, 2018). This is a ►



13 OCTOBER

INTERNATIONAL DAY FOR DISASTER RISK REDUCTION

- ▶ key measure for realising government's development aspiration we all cherish.

The Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) highlights the role of improved disaster resilience, including that of infrastructure, as a cornerstone for sustainable development. Infrastructure losses from disasters and climate events are escalating worldwide. At the same time, an unprecedented growth of investment in infrastructure sectors is expected in the coming years.

Climate change and variability will add another level of complexity and uncertainty in the development of infrastructure systems for the long term. It will also pose multiple challenges in the adaptation of existing systems. The infrastructure systems of the 21st Century are unprecedented not only in terms of scale but also in terms of their local to global interconnectedness. Infrastructure system disruptions in one location can now disrupt national and global supply chains, creating impacts that are difficult to predict such as road networks, schools, roads and bridges to name a few.

This presents both a challenge as well as an opportunity. The opportunity is that if these massive investments in new and refurbished infrastructure are made resilient, then this will make an important contribution to the reduction of disaster and climate risk and the achievement of the Global Targets of the Sendai Framework for Disaster Risk Reduction, the Sustainable Development Goals and the Paris Climate Agreement.

The challenge is that a transformation is now required in how infrastructure is designed, constructed, operated and maintained and in the financial incentives, standards, governance arrangements and capacities that are required to facilitate resilient infrastructure.

Critical infrastructures are the backbone of modern, interconnected society and economies (UNDRR, 2019). Any disruption of the key infrastructure systems and essential services such as health, education, telecommunications, energy, water supply, transportation or finance, can cause significant economic damage (OECD, 2019). Critical infrastructure resilience is a complex problem, the dimensions of which directly impact upon achievement of the Sendai Framework for Disaster Risk Reduction's overall goals.

When infrastructure fails, disaster follows. The Sustainable Development Goals will not be reached if we do not invest in resilient infrastructure.



The destruction of the Mozambique port city of Beira due to Cyclone Idai in March this year, the loss of life and the displacement of hundreds of thousands of people from towns and cities across southern Africa over a few days, underline the urgency of investing in resilient infrastructure. When we lose hospitals, schools, roads, railways, airport, electricity supply and telecommunications in disasters, the result is a major setback for eradicating poverty and achieving sustainable development. Outages to power, water, communication and transport affect productivity, incomes and jobs, as well as the quality of life of people, making it harder for children to go to school or study and contributing to the spread of water-borne diseases such as cholera.

Climate change related impacts on vulnerable households, communities, town economies and critical infrastructure and services are often most profound at the settlement and town level, and thus where adaptation is needed most. We have seen this with storm and flooding events that severely affected KwaZulu-Natal, Eastern Cape and Free State Provinces in April this year.

Disaster resilient infrastructure is key to achieve the vision of risk-informed development. Making essential infrastructure systems, such as power, water and sanitation, transport and telecommunications more resilient is critical, not only to avoid costly repairs but also to minimise the wide-ranging consequences of natural disasters for the livelihoods of people. There is a strong need to capitalise on the co-benefits of ecosystem-based approaches and

leverage the complementarity across blue, green and grey infrastructure.

We need to build the capacity of our systems, communities or societies exposed to hazards to resist, absorb, accommodate and recover from the effects of hazards in a timely and efficient manner. We need to learn from each other how to deal with the challenges that we are facing in our efforts to reduce disaster risks and promote resilient infrastructure development.

As disaster management practitioners, we need to facilitate commitment across sectors towards building resilience into infrastructure systems, particularly in the context of the increasing disaster risks in the face of climate change.

Investment and the maintenance of critical infrastructure have become important and urgent. It is crucial that strategic planning includes infrastructure investment decisions and that both prioritise design, which limit future climate impact to sustainable levels, both in general terms ie climate-smart development mitigates climate change, as well as ensuring that location-specific risks are addressed over the lifespan for any given infrastructure choice (adaptation).

From a national perspective, we are committed to accelerating the implementation of risk-informed sustainable development through focused and inclusive programmes across the spheres of Government to ensure that we entrench disaster risk reduction within our national development agenda.

The NDMC will also utilise the International Day for Disaster Reduction (IDDR) commemoration as an opportune platform in advocating for the development of resilient infrastructure and creating awareness about the role of critical infrastructure as a cornerstone in advancing the principles of DRR as contemplated in the Sendai Framework for Disaster Risk Reduction. I urge provinces and municipalities to similarly optimise this opportunity for encouraging individuals, communities, organs of state and civil society to contribute and become agents of change in building disaster resilient communities, towns, cities and provinces in South Africa.

I thank you.

Dr Mmaphaka Tau (PhD)
*Deputy Director-General (Head):
 National Disaster Management
 Centre (NDMC)
 Department of Cooperative
 Governance (DCoG)*

NEW HEAD: DISASTER OPERATIONS CENTRE AND SYSTEMS INTEGRATION AT CITY OF CAPE TOWN DMC APPOINTED



Celebrating with his family when receiving his PhD in Public and Development Management



Safety tips presenters at Tygerberg Radio with Ferdi Mostert

Dr Johan Minnie has been appointed as Head: Disaster Operations Centre and Systems Integration, City of Cape Town Disaster Management Centre from 1 May 2019. He will be reporting to Greg Pillay, Head of the City of Cape Town Disaster Risk Management Centre and this is a permanent position.

Work experience

Dr Minnie worked at the South African National Defence Force, then the City of Cape Town, Aurecon and currently again at the City of Cape Town Disaster Management Centre in the Mother City. He has worked in all the provinces of South Africa as well as in Namibia, Mozambique, Malawi, Tanzania, Kenya, Rwanda, Abu Dhabi and Dubai in the UAE, Pakistan, Saudi Arabia, Malaysia, Philippines and Australia.

Dr Minnie's work experience started in 1991 and includes disaster management, safety and security risk management, risk and resilience management and advisory, ranging from the military to emergency and crisis management to disaster risk management and climate change response.

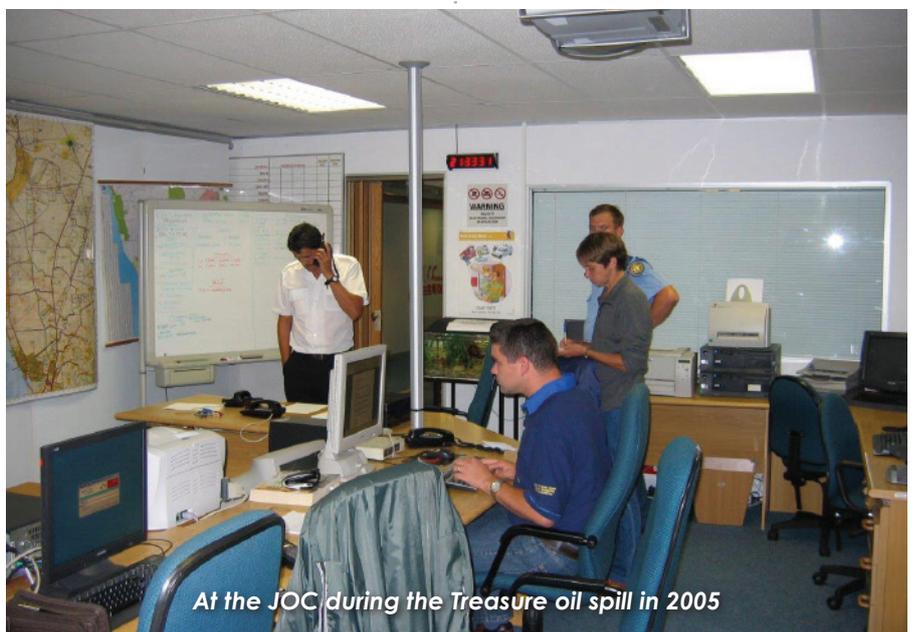
Qualifications

In 1994, he obtained a BMil (BA) Public Management and Political Science at the Faculty of Military Science at the

University of Stellenbosch followed by a BA (Hons) Public and Development Management (Cum Laude) at the School of Public Management and Planning at the University of Stellenbosch in 1998. In 2000, he attained an MPA Public and Development Management at the School of Public Management and Planning at the University of Stellenbosch and his PhD in Public and Development Management at the School of Public Leadership at the University of Stellenbosch in 2011.

Personal

In his spare time, Dr Minnie volunteers in various roles related to his intention to have fun thankfully doing good well. This includes his involvement in DMISA and youth skills development, being chairperson of a school governing body and a member of the local ward committee as well as being sound engineer at church. In his other spare time he enjoys reading, photography, videography, electronic media development, cycling and hiking. ▶



At the JOC during the Treasure oil spill in 2005

NDMC APPOINTS SERVICE PROVIDER TO DEVELOPMENT AN INTEGRATED NATIONAL DROUGHT MANAGEMENT PLAN



Ms Jennifer Lekalala, Prof Andries Jordaan and Ms Moddy Radikonyana

The National Disaster Management Centre (NDMC) appointed Résilience Globale (Pty) Ltd as the service provider for the development of an integrated national drought management plan for South Africa. Professor Andries Jordaan, former director at University of The Free State Disaster Management Training and Education Centre (UFS-DiMTEC) is the executive director of Résilience Globale and will lead the project team. The project leader and project managers are Ms Moddy Radikonyana and Ms Mosidi Jennifer Lekalala. Prof Jordaan, who is also a research fellow at the University of the Free State, is experienced in drought management planning in that he already developed drought management plans in several African countries and at provincial level in South Africa. He was also recently contracted by the United Nations Convention to Combat Desertification (UNCCD) to develop a national drought plan under the leadership of the Department of Human Settlement, Water and Sanitation.

The team that will support Prof Jordaan with the national drought risk assessment and development of an information and communication system are Prof Roland Schultze, Prof Dusan Sakulski, Dr Bernard Hlalele, Me Olivia Kunguma and Me Valeri Poto.

The NDMC support the project team with the organisation of workshops and all national and provincial stakeholders will be consulted individually and through workshops.



Meeting with the national head of disaster management in Rwanda to develop a national disaster management plan for the country in 2009 for UNDP project

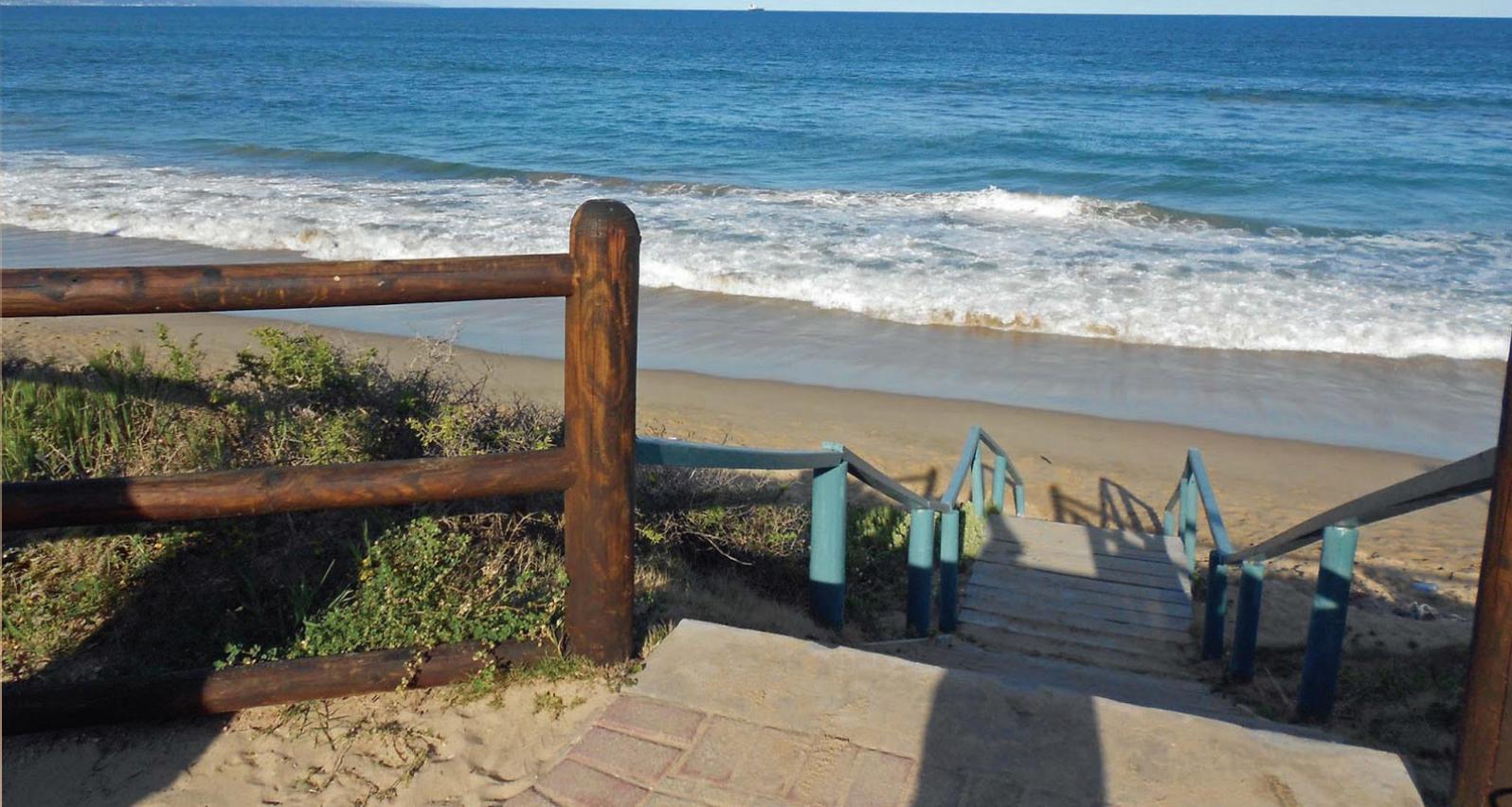
Challenges faced by the City of Cape Town Disaster Management Centre

We asked Dr Minnie what the major challenges are facing the City of Cape Town Disaster Management Centre. He responded in saying, “The main challenges faced is rapid urbanisation and increase of informal settlements, which results in increased vulnerability and exposure to hazards. Also the natural hazards associated with the coastal location, severe weather events, climate variability and climate change. Other challenges comprise technological hazards including those related to transport, manufacturing, the oil and gas industry and nuclear power. Safety at sports and recreational events in a city that is very popular for hosting such events also pose a risk.

We wish Dr Minnie well in his endeavours!

DMISA

DISASTER RISK REDUCTION CONFERENCE 2019



18 AND 19 SEPTEMBER 2019

ATKV Resort, Hartenbos, Mossel Bay, Western Cape

The Disaster Management Institute of Southern Africa (DMISA) will be holding its annual conference on 18 and 19 September 2019 at the ATKV Resort in Hartenbos, Mossel Bay in the Western Cape. This year's conference is aptly themed 'Adapting to extremes and limiting disaster loss: Pathways to integrated resilience and sustainability for basic services, critical infrastructure and thriving communities.'

The annual DMISA Conference is the biggest disaster management conference in Africa and routinely attracts more than 300 delegates and is proudly presented by the Disaster Management Institute of Southern Africa (DMISA), supported by the South African National Disaster Management Centre (NDMC), Santam and the South African Weather Service (SAWS). The Institute is recognised as the mouthpiece of the Disaster

Management profession in Southern Africa. The conference provides an annual opportunity for a diverse range of stakeholders in disaster management from across Africa to gather and share skills, knowledge and experience.

Along the world-famous Garden Route, between Cape Town and Port Elizabeth, lies ATKV Resort Hartenbos. This jewel is situated 8kms from Mossel Bay and offer budget-friendly accommodation and services by the ocean. With expansive conference facilities and top-notch service and catering, ATKV Hartenbos is the perfect choice for an inspirational conference. Activities offered includes a beach front with a heated indoor pool, super tube, bowling green, tennis courts, amusement centre, conference facilities and a huge amphitheatre where festivals and concerts take place.

Hartenbos is a popular seaside resort village situated next to the Mossel Bay industrial town of Voorbaai in the Western Cape of South Africa. The resort lies on the banks of the Hartenbos River and is an extremely popular vacation spot for local visitors.

Whale, dolphin and seal watching draw visitors to Hartenbos each year. Bird life, particularly near the river mouth, is abundant and the area is an active breeding ground for sea birds.

The conference programme includes local-, provincial-, national- and international speakers. Come and meet with our exhibitors!

For further enquiries please contact the DMISA office between 08h00 and 13h00 (weekdays) and speak to their administrator, Karin. Tel +27 (0) 11 822 1634 or email: karin@disaster.co.za. Website: www.disaster.co.za

WHY TRAIN IN ICS?



Think of what is mostly shared as the reason why incidents ‘got away’ from responders. Yes, 90 percent of the time it is said or written that “We just did not have enough resources”.

Well with that said and just before you unleash the comments and opinions, just think about it for a minute, “Not enough resources”? What does that really mean to you?

Ask yourself, maybe as a tactical responder or even as an incident commander, during an incident, does all resources know:

- What to do and who to report to?
- Do you know who they are or did they check in?
- Are they all using one incident management system?
- Do they all know who is currently in command?
- Are they aware of the current incident management structure in place?

Emergency response personnel, whether operational or functional as well as emergency operation centres (EOCs) should be trained in the incident command system (ICS) on a regularly basis, so that everyone is familiar with their role and responsibilities as defined within the plan of the organisation, local

municipality, district municipality, province or country.

Supervisory roles should receive a higher level of ICS training, as leadership bear a higher responsibility and accountability to lead a team or responders under crisis conditions.

A well-developed incident command system (ICS) training programme that both guides and promotes all levels of ICS training is vital to the successful nationwide implementation of a National Incident management System (NIMS). However, ICS training requires a continuous series of planning, organising, equipping, exercising, evaluating, taking and implementing corrective action.

Simulations (known and unknown) and exercises should also be conducted to test emergency response, continuity and communications plans and to evaluate the ability of personnel to carry out their assigned roles and responsibilities during incidents.

There is clearly a need to effectively communicate, coordinate, control and manage communicate resources during incidents and someone must be in charge, objectives and priorities must be established that will provide direction and control to avoid conflict and to establish order out of chaos.

So let’s get back to the “not enough resources.”

Do you still feel that you do not have enough resources or do you start to see that it is not always quantity but it is the quality and management of the deployed resources that will make the difference during all levels of incidents.

To summarise

- ICS theoretical training alone is not enough!
- Trained incident management teams (theory) is not enough!

What can we do?

We can make ICS training more meaningful, focused on practical implementation; in other words, structure it around practical learning and exercises.

There is a need for refresher training and no not through your own personnel but with a subject matter expert that can see the ‘missing’ elements, refresh and strengthen the core skills in the group, without being part of the team but rather the original facilitator with a fresh pair of eyes.

One thing nobody can argue is that knowledge and skills deteriorate over time and don’t say it is not so; what is not used is lost!

So why not do refresher training through the experts that trained you in the first place, instead of continuing training what “you” think is correct in your mind and your own rules, instead of using a generic trained system in the country.

Without proper, well trained personnel and correct implemented incident management systems we will remain in chaos during incidents.

Now that it is said, by training in ICS regularly, hopefully the phrase of “not enough resources” will change to “the incident was managed effectively and efficiently with well-trained and equipped resources”.



BEYOND FIRST RESPONSE

Dynamic Incident Management is a LG SETA accredited Training Service Provider and specialise in Integrated Incident/Event Management.

The importance of having trained, competent and prepared response capability from First Response to complex incident/event management personnel is vital in all agencies for effective and efficient incident and resource management.

OUR TRAINING AND SERVICES INCLUDES:

INCIDENT COMMAND SYSTEM (ICS)

- Basic to Advanced ICS (I-100 to I-400)
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- Incident Management Teams (IMT)
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THE KNYSNA FIRES 2017: LEARNING FROM THIS DISASTER

*A collaborative research report between Santam, the University of Stellenbosch and CSIR.
Supported by the Western Cape Disaster Management Centre*

The Knysna fires of 2017 have resulted in much deliberation about the ability to manage such extreme incidents and have led to numerous findings and subsequent reports on the event that has had such a disastrous impact on all involved. On the positive side, it has also resulted in in-depth discussions, meetings and workshops on strengthening the weaknesses and building relationships in order to strengthen response during future incidents. One thing is certain and that is that this will occur again and we need to be ready.

The following article is an excerpt from the collaborative research report between Santam, the University of Stellenbosch and the Council for Scientific and Industrial Research (CSIR) and is supported by the Western Cape Disaster Management Centre. The article is printed with permission from Santam.

We used mostly the key points, recommendations and conclusion from the report but slightly rearranged so as to make for easy reading. The report is available for download from www.radar.org.za.

When extreme weather, drought and ignitions combine, as they did in the Knysna fires, all fire protection measures can fail and will do so in many cases. Nonetheless, prevention is critical to reducing the risk of severe and damaging fires. We can and must strengthen capacity to respond when fires occur but we must prioritise prevention and preparedness. Without effective fire protection measures, human lives, livelihoods and assets will be exposed to far greater and, often, eminently avoidable fire hazards, particularly given expected global environmental change. In addition,

the risks faced by those attempting to fight the fire or protect their properties are significantly increased because they are exposed to far greater fire hazards. The impacts on the resilience and recovery of the natural environments affected by these fires will also be significantly greater. The one beneficiary, so to speak, is the invading alien plants, which will multiply and create an even greater fire hazard if they are not dealt with promptly and effectively.

The costs of the Knysna fires to the town and its inhabitants illustrate the importance of implementing effective measures to reduce risk in the Garden Route and South Africa. The benefits of fuel reduction, from measures such as prescribed burning in rural areas outside the wildland-urban interface (WUI), to ensuring that firewood is not stacked against the walls of a house and gutters are clear of litter, far outweigh the costs. Everyone has a role to play in this and citizens need to realise their responsibilities and not place all the responsibility on fire management agencies. The insurance industry can play a critical role in supporting risk reduction and rehabilitation and recovery.

Purpose of report

The Knysna fires were a perfect storm. A range of meteorological, bio-physical and institutional factors came together to create the disaster. But the underlying risk drivers are replicated throughout the Western Cape and in other provinces, creating the potential for similar wildfires elsewhere, as evidenced by extensive wildfires in Hessequa, Mossel Bay, George and Knysna Municipalities in November 2018 and the Overberg in January 2019. The purpose of this report is to identify the lessons and

how they can be applied to reduce risk and strengthen preparedness for future fires when they occur. The focus is on the Knysna Fires but the findings are applicable to the Southern Cape and to many other places in South Africa that experience wildfires in their natural vegetation (CSIR 2019).

The research

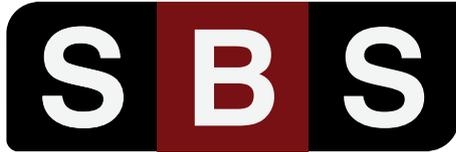
As a first step in identifying lessons and enhancing learning, Santam commissioned three linked research projects aimed at improving the understanding of the pre-fire situation, the fire incident itself and the post-fire recovery efforts. The goal of this was to:

1. Assist authorities and communities to be better prepared for future wildfires to reduce impacts
2. Identify how the insurance industry can support fire reduction initiatives at an appropriate level
3. Through the understanding gained, prevent the harmful consequences of wildfires through improved implementation of integrated fire management, including mitigation interventions and supportive institutional arrangements.

This research was conducted by the Council for Scientific and Industrial Research's (CSIR's) Natural Resources and the Environment Operating Unit (NRE) and Meraka Institute, the Research Alliance for Disaster and Risk Reduction (RADAR) at Stellenbosch University and Stellenbosch University's Fire Engineering Research Unit (FireSUN).

The three research projects were designed to document and develop an understanding of:

- The fire behaviour and its causes or drivers (CSIR) ▶



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- The human and institutional risk drivers that increased the impact of the fires (SU/CSIR)
- The unfolding incident, including the timeline of the incident and the actions taken by institutional role-players and members of the public (CSIR/SU)
- The impacts of the event, including social impacts and financial costs due to infrastructural damage and property losses (SU/CSIR)
- Post-fire recovery measures (SU/CSIR) and
- The potential for similarly damaging wildfires to occur elsewhere in South Africa (CSIR).

Fire in natural vegetation in South Africa

Most of the natural vegetation types of South Africa evolved with fire, burn regularly and require fires to keep them vigorous and healthy. Fire-adapted vegetation ranges from the Highveld grassland to the coastal grasslands in Zululand, from the savannas of the Lowveld to the Kalahari and the grassy Nama Karoo to the Fynbos. Fires in many South African vegetation types are therefore both necessary and inevitable. The question is “When?” not “If?” there will be fires. This means that fire management practices must seek to reconcile the ecological requirement for fire with the protection of human lives, a delicate balance that is at the heart of veldfire policy and legislation.

The key point here is that fires in many South African vegetation types, including fynbos, are both necessary and expected.

Mega-fires

The risk of fires and ‘mega-fires’ is increasing. Climate change is extending the fire season in southern Africa and owing to rising temperatures and the increasing number of high and extreme

fire-danger days. Although there is not yet a clear upward trend in fire frequencies locally or globally, there is evidence that fires are becoming more difficult or impossible to control.

Are fires increasing in South Africa?

A growing population and expansion of the urban footprint into flammable natural vegetation is increasing both the likelihood of fires and the number of people in harm’s way.

There is an increased risk of wildfires in the future. Without change, we are likely to see more ‘mega-fires’ in the Western Cape and elsewhere in South Africa and associated deaths and destruction. While the changes associated with climate change are unavoidable, we can and should take steps to reduce the frequency and magnitude of damaging wildfires. This will require balancing the ecological need for fire with the protection of human lives. It will also require that the authorities, exposed communities and landowners take steps to reduce the severity of fires and their impact.

The Knysna fires – a perfect storm

The Knysna fires occurred at the intersection of an array of hydro-meteorological, bio-physical, institutional and developmental factors, which are in turn linked to ecological, legislative and institutional dynamics. This research also highlighted critical capacity constraints affecting both fire-risk reduction and fire-response operations. Although this combination of factors came together to drive a fire of rare severity and magnitude, a similar combination of factors could occur anywhere within the Garden Route or elsewhere in South Africa. Therefore, identifying, understanding and addressing these factors is critical to reducing the risk of such fires in the future.

Hydro-meteorological conditions

The Knysna fires occurred during circumstances that are associated with similar wildfires worldwide: dry conditions created by an extended and severe drought, hot and dry weather with low atmospheric humidity and very strong winds that shifted abruptly in direction and strength. The 18-month running mean drought index shows that the drought was the most severe on record but, although the fire danger index had high values, there were occasions during the past 70 years when the fire indexes reached the same or higher levels.

Exposure of communities, assets and infrastructure to the Knysna fires

Topography and dominant vegetation types, particularly invasive alien plants (IAPs) and commercial forests, have high fuel loads that helped to make the fires more intense and severe. Settlement patterns increased the destructiveness of the fires. Dwellings that were damaged or destroyed were concentrated in areas that were densely invaded with IAPs and commercial forests and many were located on slopes, which increase the speed of fire spread. These findings clearly highlight the need for more effective fuel reduction in the WUI and the application of measures aimed at protecting structures, including houses, from fires (and reducing the probability of ignitions and the consequent losses).

Surrounding vegetation

Having tree or shrub vegetation near dwellings increases the chances of them being damaged or destroyed. Homes that have cleared space or short vegetation around them are much less likely to be damaged or destroyed.

Susceptibility of homes to fire

The features of the Home Ignition Zone (HIZ) are critical in determining whether a home survives fire. Simple ways of improving the chances of a home surviving include:

- Moving fuel sources away from homes and ensuring that gutters and roofs are kept clear of flammable leaves and debris.
- Choosing materials that are more resistant to fire. Roofing is particularly important and homeowners should ideally avoid highly flammable materials, such as thatch or take precautions to make them more fire-resistant.

Reducing risk effectively requires collective action by all those living in exposed communities.

Inconsistent land management practices

Improved management of land is critical to reduce the threat of damaging wildfires.

Inadequate understanding of risk by landowners, sometimes inadequate capacity to undertake activities and government's limited capacity to enforce owners' legal responsibilities, as well as the cost of interventions, currently prevent strategic land management. Getting landowners involved in risk reduction is essential. This requires incentivising action and building enforcement capacities. The insurance industry could support risk reduction by encouraging policy-holders to manage their land more effectively and requiring them to join their local fire protection association (FPA).

The Southern Cape FPA and other FPAs can play an important role promoting risk reduction and coordinating the activities of landowners but they are critically under-resourced. The insurance industry and private sector more generally, could help to build FPA capacity.

Strategic prescribed burning is an important environmental management tool. However, the prospect of financial liability should a prescribed burn get out of control is a significant deterrent, thereby increasing the risk of damaging fires. Prescribed burning needs to be complemented by fuel reduction in the WUI. This includes the use of firebreaks, created by burning, brush-cutting or encouraging vegetation with low flammability.

Prevention and response capacities

There are a range of role-players involved in fire prevention and response, with non-governmental stakeholders helping to spread the load on government resources. This notwithstanding, municipal fire and rescue services lack the capacity to perform optimally, particularly at the district level. This is particularly problematic as it is district municipalities that are mandated to respond to wildfires. This again suggests a role for the private sector, including the insurance industry. They could play a role in building capacity through corporate social responsibility programmes, particularly with respect to vehicles and equipment.

Other settlements exposed to similar fire risk

Many settlements in South Africa are exposed to significant fire risks, a situation which needs to be addressed. The CSIR's Green Book project is aimed at helping municipalities to manage their natural environmental risks under a changing climate (www.greenbook.co.za). This included a fire risk assessment within a one kilometre buffer around 1 596 settlements across South Africa, based on the vegetation characteristics and the occurrence of veldfires. Fire occurrences

for 49 percent of these settlements were classified as 'likely' and 33 percent as 'possible', which means that parts of their boundary are regularly exposed to wildfires with sufficient fuel to potentially damage infrastructure at least once in every 10 to 15 years. In addition, about half of these settlements have at least 25 percent of their buffer areas in the high or extreme fuel load classes. In the case of Knysna, more than 85 percent of the area burnt fell into the high or extreme fuel load classes, a factor which undoubtedly contributed to the difficulty of controlling these fires and, via embers and spotting, to the very rapid spread of the fire.

Reducing the risk of future fires

Several dynamics contributed to the devastation caused by the Knysna fires, which included very hot and dry conditions, the concentration of assets and housing in high-risk areas, the vulnerability of dwellings, high fuel loads in many areas and limited capacities to either promote risk reduction or respond to fires. Given that a shift in climatic conditions and urban expansion is inevitable and existing resource constraints, the emphasis must be on reducing the risk of fires. In addition to the points highlighted above, the research suggests two critical areas for action:

Reducing risk through integrated fire management

Integrated Fire Management (IFM) is essential. Reducing the risk of serious fires can only be achieved at a landscape level, and requires action across a range of sectors, scales and interest groups. Municipalities have a critical role to play in reducing development in high-risk areas and Knysna Municipality is already taking steps to do this by re-working its Spatial Development Framework (SDF). Landowners and

homeowners also need to play their part, as do developers.

Building response capacity

It is important to boost the fire services' capacity to respond to fires, especially given the expected shift to promoting prevention in the amended Fire Brigade Services Act (FBSA). Prevention is critical at both the district and local municipal level but particularly at the district level, as it is the district service that is ultimately mandated to respond to wildfires. Organisations like Working on Fire (WoF) and the SCFPA and volunteers represent valuable resources but FPAs and their constituent fire management units (FMUs), in particular, need to be adequately resourced, trained and equipped to play their role. They are also no substitutes for the fire and rescue services. Capacity building must seek to strengthen both municipal and external capabilities.

Through their social responsibility programmes, the insurance industry and private sector more generally, could help to build governmental and FPA capacity, particularly with respect to vehicles and equipment. Santam's Partnership for Risk and Resilience (P4RR) initiative, which aims to capacitate local government with fire and flood risk management skills and equipment, is a useful example of how insurers could assist in improving local capacity.

A complex and demanding incident

The response environment during the fires was extremely demanding. There were a huge number of moving parts and several unanticipated challenges. The critical lesson is that the worst can happen. It is essential to plan and prepare for complex, large-scale events, simultaneous infrastructure failures and



- ▶ road closures, as well as high-visibility events generating intense public interest and extensive relief operations. As discussed later, social media is also becoming an increasingly powerful dynamic in disasters and it is essential that authorities engage the medium.

In addition to building the capacity of fire fighting resources, the insurance industry could consider practical measures to build the resilience of municipalities to infrastructural failures, such as sponsoring generators for fire stations and life-line services such as pump stations.

Ensuring that members of the public have escape routes and the emergency services access is critical to prevent deaths and injuries and property losses. In Knysna specifically, the lack of alternative roads to the N2 and single entry and exit roads to some suburbs, poses a danger to residents. The municipality should seriously consider building additional roads to improve available escape and response options.

Strengthening early warning

The current National Fire Danger Rating System is not appropriate for the Garden Route District and the fynbos biome in general. An accurate early warning indicator could help authorities to be better prepared for incidents such as the Knysna fires. The Canadian Forest Fire Danger Rating System (CFFDRS), and specifically its Fire Weather Index (FWI) and Daily Severity Rating (DSR), would provide a useful complement to the current Fire Danger Rating System.

Learning from the disaster: strengthening humanitarian response in the Western Cape

Recognising the challenges experienced in June 2017, the Western Cape's Department of Social Development

(WCDSO) is developing a social relief management protocol to guide the Department's involvement in humanitarian responses. This establishes the WCDSO's role and responsibilities, provides guidance on donation management and identifies critical stakeholders who can help to support people affected by disasters. The Garden Route District Municipality (GRDM) is developing its own protocol, in collaboration with the WCDSO and other stakeholders, which also establishes roles and responsibilities and guidelines for the strategic deployment of resources.

Establishing such guidelines should facilitate more responsive and efficient action during future disaster events and could provide a useful model for developing similar frameworks elsewhere in the South Africa.

Strengthening response capacity

The essential lesson is that neither government, other agencies nor the public were adequately prepared for an incident on the scale of the Knysna fires, particularly at the local level. Given anticipated increases in the frequency of large wildfires in the future, preparing for large-scale, complex and multi-stakeholder events is essential.

This research identifies a need for:

- training and equipping people to better deal with complex events, particularly at the district and local scale
- evacuation planning and communication strategies
- planning to facilitate inter-governmental and inter-agency cooperation and resource mobilisation and make institutions more resilient

- greater strategic leadership in both fire operations and civilian responses and
- strengthened data collection and analysis to inform decision-making.

A good starting point would be to strengthen response planning. It is critical to develop evacuation plans and to engage members of the public to create community-specific strategies, along with event thresholds that should trigger evacuations. Developing these plans could be included in efforts to promote more fire-ready communities. Mutual aid agreements between municipalities and plans and instruments to guide inter-agency and inter-departmental resource-sharing would facilitate more rapid and efficient action. Another is to ensure that all fire fighting resources are properly equipped and trained to fight wildfires.

Turning to the humanitarian response, this research highlights:

- the municipality's limited resources, facilities and expertise to manage large-scale relief operations
- the need for standardisation with respect to beneficiary criteria and standards of relief and donation management systems
- the importance of data collection and standardisation and
- mechanisms to ensure information-sharing and alignment of relief activities across organisations.

The multiplicity of role-players involved in the humanitarian response, the flood of donations and inadequate systems for managing these were key challenges, suggesting that the WCDSO and disaster management agencies need to identify and engage with NGOs involved in providing humanitarian assistance in the GRDM to define roles and responsibilities and minimum standards of relief during disasters. The guidelines being developed by both the WCDSO and the GRDM provide an opportunity and framework for engaging with a broader suite of NGOs. Given the lack of capacity in local government to cope with large-scale relief operations in many parts of South Africa, the findings suggest that local governments should consider alternative relief models that tap the expertise and capacity of NGOs. It is important that all NGOs are thoroughly vetted and that municipalities engage with and monitor NGOs on an ongoing basis to ensure fairness and the integrity of relief provision.

Crisis communication during the Knysna Fires

Communication between the authorities and the public was sometimes challenging. Difficulties associated with



the event, particularly self-dispatching and donations, were in large part due to this communication gap and might have been avoided. Early, clear and ongoing communication is essential not only to provide information, but also to more effectively direct and harness the public's desire to help. Training municipal communications teams in crisis communication for comparable events would help strengthen their capacity to engage effectively with the public. Strengthening the ICS communication function would also facilitate more effective communication.

Social media

Social media is becoming an increasingly important dynamic in disaster response, one that the authorities must engage with in order to remain current. This is particularly important given the potential for both intentional and unintentional misinformation. Social media provides a useful tool for sharing information during disasters. In Knysna, Facebook users predominantly sought information and responded primarily to posts with a visual element. This suggests opportunities to target package information to reach a wider audience.

The research highlights the importance of effective communication during disasters. It is critical that the authorities communicate with members of the public effectively, as consistently and as early as possible. This is not only essential to keep them informed and safer but also to ensure that the public is aware of their needs and requirements and how they can best help.

Social media platforms represent a powerful communication tool but the authorities have yet to harness them optimally. This is necessary not only because these platforms represent a powerful tool to engage the public but also because the authorities need to counter negative aspects, such as misinformation. Such engagement need not be confined to crisis communication during incidents; social media also provides a medium to interface with the public during and after events, when it provides opportunities to educate, organise and keep people informed.

Post-fire recovery efforts

Recovery efforts were centred on the Garden Route Rebuild Initiative (GRRRI). The GRRRI sought to optimise efforts to 'Build Back Better'. Given the scale of the damage to housing, infrastructure and the environment, the extensive humanitarian support needs and the large number of role-players gearing up to respond, the GRRRI was envisaged



as the anchor for a comprehensive, integrated reconstruction and recovery effort for the Garden Route.

The initiative aimed to create a multi-disciplinary, inter-governmental and multi-sectoral platform to align and maximise recovery and rehabilitation efforts. It brought together national, provincial and local government, state-owned enterprises, community members, civil society organisations and the private sector in seven sector-based working groups to design and implement recovery projects.

Rapid deployment of post-fire, anti-erosion measures

Various actions were taken to limit erosion and sediment loss on steep areas, upslope of infrastructure such as roads, houses and pump stations, particularly where there have been severe fires. In total, 358 fibre mats and 5 826 fibre rolls were installed on these high-risk slopes. These are the kinds of responses that should become the norm.

Two positive outcomes of stabilising the steep slopes and allowing the vegetation to re-establish itself rapidly, were: (a) that it minimised localised mudslides, thereby preventing homes and infrastructure being flooded in the weeks and months after the fire and (b) it also limited the amount of silt from the burnt area that would be deposited in the environmentally sensitive Knysna Lagoon.

Counting the cost

The fires cost Government, the insurance and forestry industries a little over R3 billion in direct costs but these figures under-estimate the true cost of the incident. The impact on those who lost homes, businesses and jobs

was immense but this is impossible to quantify as the information is not publicly available. Data on the losses sustained by parastatals was also unavailable. In addition, there are indirect costs that are difficult to measure. The private sector sustained the heaviest losses.

Even though official figures probably underrepresent the cost of the fires, the losses sustained by Government and the insurance and forestry industries highlight the destructiveness of large fires and the value of investing in risk reduction. The return on money spent on efforts to prevent destructive wildfires and mitigate their impact is exponential compared to the costs of not acting. The losses sustained by insurance companies, in particular, underscore the benefits that the insurance industry could gain by being more proactive, particularly given anticipated increases in the frequency and severity of fires due to global warming.

Challenges to restoring infrastructure following disasters

The research suggests that prevailing emergency and recovery funding processes may inadvertently undermine the principle of 'building back better'. Provincial and municipal departments submitting claims for emergency and recovery funding following a disaster must specify whether the damaged infrastructure has already been repaired, in which case it is usually excluded from allocations. The problem is that this penalises departments who undertake temporary repairs. For example, Knysna Municipality's Electrical and Energy Services Department spent R6,4 million on emergency repairs to restore essential electrical reticulation and infrastructure immediately following the fires. Some of these repairs were known to be temporary



▶ because they used second-hand parts nearing the end of their lifespan. However, because the electrical systems were functioning when the damage was assessed, they were not awarded the funding needed to make permanent repairs and engineers expect to see the aging parts failing in the near future.

The long road to recovery

The fires had a profound impact on Knysna’s residents and economy and recovery is happening slowly. Many of the homes and businesses damaged or destroyed were not insured or were underinsured and people are struggling to rebuild. The findings highlight a ‘missing-middle’ of people who have been left in a precarious position by the fires. A key challenge lies in knowing how to support these households, who currently fall through gaps in existing social safety nets. The insurance industry could play a role by exploring insurance options that are more affordable and tailored to the needs of pensioners and others in this group.

Recommendations

Wildfires are both necessary and expected in South African ecosystems and with global environmental change, are likely to become more frequent. The conditions conducive to uncontrollable ‘mega-fires’ also are likely to occur more frequently. Population growth and the expansion of the WUI are also increasing both the communities’ exposure to wildfires and the likelihood of human activities starting fires. Despite this, it is possible to reduce both the risk of destructive fires and their impact on the exposed communities. However, we first must recognise that our current fragmented

approaches to fire management, which involve a range of organisations and actors, are not effective, especially in a changing fire environment. We also need to strengthen our ability to respond to fires through capacity building, planning and preparation.

Integrated fire management (IFM) incorporated different fire management activities in a strategic framework to reduce the overall impact of unwanted fire damage and promote the beneficial use of fire. A clear and shared understanding of IFM is essential to successfully engaging all stakeholders in fire risk management (FynbosFire 2016). IFM should inform all activities aimed at reducing the risk of damaging fires and improving readiness, response and recovery planning. The recommendations that follow need to be implemented within the context of IFM.

Recommendations for Government
Reducing the risk and impact of wildfires:

- The authorities must commission research to assess the risk of damaging wildfires to vulnerable communities along the WUI in settlements across South Africa.
- Municipalities should ensure that they manage fuel loads on municipal land along the WUI. They should protect vulnerable infrastructure through zonation or restrictions and fire-proofing of structures.
- Municipalities should consider introducing by-laws to promote fire risk reduction, and explore measures to enforce existing legislation. They should also incorporate fire-risk reduction into the planning of new developments.

- Municipalities should work with FPAs to effectively educate the public so they have a far better understanding of fire risks and what they can do to reduce them. They should find ways of maintaining awareness during wildfire-free periods. Education activities should include people living in informal settlements along the WUI. FPAs must be remunerated for their efforts.
- Municipal fire and rescue services should take pre-emptive action to deal with naturally occurring fires if they are within inhabited landscapes, regardless of whether they present an imminent threat. Provincial government should assist with additional training and resources where needed.
- District municipalities, in collaboration with FPAs, should develop and adhere to standard operating procedures for remote-area and lightning-strike ignition monitoring and suppression.

Reducing fuel loads

The National Disaster Management Centre (NDMC), DEADP and other relevant role-players should explore ways of addressing disincentives that favour risk aversion and hinder adaptive management both within and between organisations.

Municipalities must support FPAs to develop collaborative local networks among organisations working on fire-related issues to build trust, an understanding of how to reduce fire risk and how to turn this understanding into action.

Enhance the fire danger index component of the national fire danger rating system

The NDMC together with South African Weather Service should consider including the Canadian FWI in the National Fire Danger Rating System in addition to the LFDI currently in use.

Strengthen planning at the municipal and district level

- Provincial Disaster Management Centres should train and equip resources to better deal with complex, multi-stakeholder responses.
- Municipal disaster management and/or the fire and rescue services must give top priority to the development of evacuation plans. These should incorporate responses under different conditions and provide for the simultaneous loss of electricity and ICT infrastructure.
- Municipal disaster management centres should work with the fire

and rescue services and municipal managers to identify and include critical role-players to be included in disaster planning. Scenario exercises and training will help identify critical role-players, establish roles and responsibilities and build relationships. Planning activities should include both civilian role-players and emergency responders.

- Municipal disaster management centres and/or the fire and rescue services should establish agreements to facilitate inter-governmental cooperation and resource mobilisation. The National Incident Management System (NIMS), which promotes the multi-stakeholder coordination system, provides a framework for strengthening collective action at this level.
- Municipal disaster management centres and/or the fire and rescue services should also establish Memorandums of Understanding with agencies such as SANParks and CapeNature to define their roles and responsibilities.
- Disaster management and the fire services should engage with municipalities to explore how to better integrate municipal funding and oversight mechanisms. Municipalities should explore the potential for expediting extraordinary procurement and funding during emergencies.

Strengthen capacity to respond to wildfires

- The National Disaster Management Centre must prioritise capacity-building in the fire and rescue services, particularly with respect to training and equipping municipal firefighters to respond to wildfires, particularly on the WUI.
- The WCDMC, and other provincial disaster management centres, should develop the logistical and institutional capacity to support the implementation of the ICS, especially for extended incidents. ICS training should also be considered for municipalities' senior management and communications teams.
- Municipal fire and rescue services must work with FPAs to ensure that communities become more self-sufficient and self-organised to be better prepared for wildfires. This should include providing guidance on defending properties, developing evacuation plans and identifying safe refuges when there is no way out.
- Municipal disaster management centres must ensure that communities have access to early warnings and are able to act on

warnings. This should be linked to evacuation planning.

- Municipal planning departments and the relevant municipalities must ensure that towns, suburbs and developments have enough access routes for efficient access and egress, especially for emergency services. This must include roads to access natural vegetation in areas behind secure estates because walls and fences will not prevent fire from spotting into the estate or finding continuous fuels. Knysna Municipality must consider building an additional road to provide alternative routes into and out of Knysna if the N2 is closed.
- Municipalities must fire-proof critical infrastructure and ensure that sufficient water is available for fire fighting, even in the event of fire damage.
- Municipalities, in collaboration with FPAs, should review policies relating to the use of backburning during an incident. Approval by the incident commander should be granted based on the current and foreseen fire behaviour.
- Municipal fire services must strengthen coordinated information gathering and fire behaviour analysis capacities to improve situational awareness and intelligence in the incident management team. A person dedicated to documenting, in detail, the progress, behaviour of the fire and the responses must be present in the situation unit at the incident command post.

Strengthen humanitarian relief management

- Municipal disaster management centres at both the district and local level must work with the WCDS to identify and engage with prominent NGOs to define roles and responsibilities and minimum standards of relief during disasters. The guidelines being developed by both the WCDS and the GRDM provide an opportunity and framework for engaging with a broader suite of NGOs.
- Identified NGOs need to be included in coordination structures to ensure information-sharing and alignment of activities. They should also be included in response planning and exercises.
- Municipalities also need to explore arrangements for accepting financial donations. One option could be to establish agreements with humanitarian NGOs such as the SARCS that would allow them to accept, administer and disburse donations on the behalf of government.

Improving communication with the public

Municipalities must ensure that communication personnel receive training on crisis communication, and that communication units are adequately staffed and resourced. Communications teams must identify high-profile social media influencers and enlist their support in spreading messages and directing users to information sources. Communications teams should engage as early as possible to proactively shape the conversation.

Plan post-fire environmental recovery and rehabilitation properly

DEADP, in collaboration with FPAs, must get all relevant stakeholders (officials, business and knowledgeable private individuals) around the table as soon as possible after an event to plan and prioritise control efforts and thereby optimise the use of resources.

Enable responsive action to address time-sensitive rehabilitation concerns

The WCDMC must engage with the NDMC and Treasury to explore quick-release funding mechanisms to enable time-sensitive recovery activities immediately after a disaster.

Data collection for risk assessment and monitoring to inform risk reduction

All municipal impacts should be recorded, independently of funding processes. There should be uniformity across all municipalities and sectors for calculating and presenting damage costs. These should be actual costs and not estimates. The WCDMC should establish a standard impact reporting procedure for municipalities and government departments. This includes the standardisation of electronic formats and clear designation of a focal point to consolidate information, as onerous reporting demands on technical personnel keep them from their core responsibilities. Impact reporting templates should include a description of damage and a spatial reference ie GPS coordinates. Post-disaster assessment findings should be integrated into risk assessments as a measure of actual as opposed to possible impacts.

Recommendations for all stakeholders: adopt a learning approach

It is often very difficult to get detailed information after fires on facts like who did what and when, what then happened and why. The real problem is that the opportunity for sharing the learning and for adapting is lost or, at the very least, delayed. Resolving this challenge is critical to inform a learning and adaptive approach to support more effective veldfire risk management. 🇷🇺

A CONSEQUENCE MANAGEMENT APPROACH TO DISASTER MANAGEMENT: RESPONSIBILITY IN RESPONSE MANAGEMENT

By Dr Johan Minnie and Schalk Carstens

PART 6



Hazard

- Epidemics, Health
- Floods, Dam Breaks
- Veldfires
- Bombs, Civil Unrest
- Housing Needs
- HazMat / Pollution
- Mining / Nuclear
- Transport
- Fire
- Drought
- Humanitarian Relief



Responsibility

- Health
- Water Affairs
- Forestry
- Police and Military
- Housing / Human Settlements
- Environmental Affairs
- Mineral and Energy Affairs
- Transport
- Local Government
- Agriculture
- Social Services

This article is the third and last instalment on response management and the sixth article within this article series on consequence management.

In the previous article we discussed the need for coordination and potential coordination mechanisms. Responsibility in response management is the focus of this article and we start the discussion with the following illustration, which lists hazards and then a responsible party is listed for each hazard.

The question, “Who is in charge?” has frustrated many emergency responders and members of joint response management teams in the past and will continue to do so in the future. This question is easily answered within the structure of a single responding agency or department because clear reporting lines normally exist. There can be less clarity in joint response structures about who is in charge but persons with many years of experience have said that the more important question to ask is, “Who is in charge...of what?” Determining who is in charge of what is a critical activity that should be completed during planning, long before actual response. The importance of the assignment and acceptance of responsibility for preparedness and response activities by role-players cannot be overemphasised. Without this assignment and acceptance of responsibilities, preparedness and response cannot function effectively.

Responsibility should be assigned through legislation to a specific organ of state, which will be responsible for reduction, preparedness response and recovery of the allocated hazard or activity. Examples of these are a department of health that manages communicable diseases (epidemics), a department of agriculture that manages animal diseases and agricultural drought and a department of water that would manage the flooding hazard.

The following table provides an example of responsibility allocation through the identification of hazard owners, ie organs of state that will take the lead in dealing with a specific hazard.



Broad Hazard Category	Specific disaster risk category	Proposed primary organs of state
Hydro meteorological	Climate-related	
	Extreme weather	Water Affairs (When floods occur) (N)
	Meteorological drought	Agriculture (N & P)
	Hydrological	
	Riverine flooding	Water Affairs (N)
	Estuarine flooding	Water Affairs (N)
	Coastal flooding/storm surges	Water Affairs (N)
	Urban flooding	Water Affairs (N)
	Hydrological drought	Agriculture (N & P)
	Agricultural drought	Agriculture (N & P)
Geological	Seismic risks and earthquakes	Mineral Affairs (N)
	Rock falls and landslides	Mineral Affairs (N)
Biological	Fires	
	Urban fires	Cooperative Governance (N & P)
	Veldfires	Forestry (N)
	Epidemics	
	Humans	Health (N & P)
	Livestock	Agriculture (N & P)
Environmental	Air pollution	Environmental Affairs (N & P)
	Water pollution	Environmental Affairs (N & P)
	Soil erosion/land degradation	Environmental Affairs (N & P)
Technological	Risks associated with installations	
	Power plants	Energy
	Bridges	Water Affairs (N)
	Dams	Water Affairs (N)
	Petrochemical installations	Mineral Affairs (N)
	Risks associated with transport	
	Road	Transport/ Environmental Affairs (N & P)
	Air	
	Sea	
	Rail	
	Hazardous materials	
	Marine oil spills	Transport/Environmental Affairs (N & P)
	Toxic cargo spills	
	Radioactivity emissions	
	Risks associated with flammable materials and surfaces	
	Urban formal structure fire	Cooperative Governance (N & P)
	Urban informal structure fire	Cooperative Governance (N & P)
Social conflict	Not disaster management hazard	
	Xenophobia	Internal Affairs
	Terrorism	Police

► **Table 3: Allocation and clarification of response management responsibilities**

Agency/discipline/service	Responsibilities in all-hazard response
Fire brigade services	<p>The primary function of the fire and rescue service is to carry out all fire fighting and related activities by:</p> <ul style="list-style-type: none"> • protecting life and property against fire or other threatening danger; • rescuing of life from fires or other threatening danger; • preventing the outbreak or spread of fire and the fighting or extinguishing of fires.
Emergency medical services	<p>The primary function of EMS at an incident is to deal with the emergency medical care and medical rescue of patients affected by the incident, emergency or disaster and their rapid evacuation to the nearest appropriate health facility</p>
Police service	<p>The primary function of the police is to maintain law and order during an incident, emergency or disaster by:</p> <ul style="list-style-type: none"> • Assessing the situation; • Activating police and other services via radio control; • Establishing a cordon in the immediate area to prevent further loss of life and/or looting; • Coordinating operational activities with those of other policing and safety and security disciplines; • Assisting to implement effective command and control on scene together with the various response disciplines via the on-site JOC.
Disaster management centre	<p>The primary function of the disaster management centre and its staff during the response, relief and rehabilitation phases of a major incident, emergency or disaster is to coordinate the integration of activities of the various services/disciplines on- and off site and to ensure that there is good liaison and information flow between these services. The head: of the municipal DMC will also liaise with the Head of Centres of the provincial and the National DMCs in respect of issues around the possible declaration of a local state of disaster, outside assistance and emergency funding. The DMC can assist with the provision of the mobile on-site JOC, the availability of the disaster operations centre (DOC), equipment and facilities for tactical and strategic incident management functions, various other logistical needs and the provision of support personnel in the form of disaster management volunteers.</p>
Municipal traffic services	<p>The primary function of the municipal traffic services during an incident, emergency or disaster is to manage the flow of traffic around the incident and to safeguard the incident site/area from a traffic point of view to facilitate speedy response by all services and to assist with outer cordon enforcement. Municipal traffic services will liaise with the MPD, law enforcement and security, the police as well as the traffic services, as required by the situation.</p>
Municipal police department	<p>The primary function of the MPD service during an incident, emergency or disaster will be to support the police and other municipal and national law enforcement/safety and security agencies in the prevention of crime, crime investigation, public safety operations and municipal law enforcement.</p>
Municipal law enforcement and security services	<p>The primary function of the law enforcement and security services during an incident, emergency or disaster will be to enforce municipal by-laws and safeguard municipal assets and generally assist the police and other national and provincial law enforcement/safety and security agencies in the prevention of crime and public safety operations as required by the situation.</p>
Traffic services	<p>The primary function of the traffic services during an incident, emergency or disaster on or adjacent to one of the national routes is to manage the flow of traffic around the incident and to safeguard the incident site/area from a traffic point of view to facilitate speedy response by all services and to assist with outer cordon enforcement. Traffic services will liaise municipal traffic services, the municipal police department, municipal law enforcement and security and the police, as required by the situation.</p>
Military	<p>The primary function of the military is national defence and related issues. A secondary function of the military, in the case of major incidents, emergencies and disasters, is to assist where life and/or property is threatened with all the resources that they have available.</p>
(Essential services) Municipal housing	<p>Provide shelter for affected communities, including mass care centres (MCCs)</p> <ul style="list-style-type: none"> - Provide basic starter housing kits - Register affected persons

Table 3 continued

Agency/discipline/service	Responsibilities in all-hazard response
Sport and recreation	Provide halls, stadia and other municipal facilities for emergency shelter or any other emergency use, as required by the situation
Electricity	Provide emergency lighting to affected site - Replace and repair damaged electricity infrastructure - Provide electricity supply to temporary mass care centre
Water and sanitation	Provide water supply to any temporary mass care centres - Repairs to damaged water supply and sanitation infrastructure - Provide temporary ablution facilities, as required
Roads and storm water	Provide temporary access and egress roads to affected sites and mass care centres, as required - Provide pumping equipment and water tanks for floodwater draining, as required - Provide temporary channelling and sandbags to prevent flooding of affected sites and MCCs, as required
Health	Assess and regulate public health issues on site and at MCCs - Assist with the provision emergency sanitation requirements on site - Provide medication and a temporary health service to affected communities, in liaison with city health
Finance/procurement	Provision for emergency procurement and related procedures
Solid waste management	Provide emergency refuse removal facilities
Specialised technical services	- Provide emergency transport, as required - Provide heavy duty plant (bulldozers, trucks, etc.) - Provide emergency storage facilities and recordkeeping - Provide emergency fuel and other logistics
Planning and building development management	- Assess and monitor the safety of damaged infrastructure (buildings, bridges, dams and other structures) - Assist with the provision of additional - Engineering services, as required
Communications	Provide communication service to the general public and the media (in liaison with DMC and services management)
Social development	Provide social services, as required
Education	Provide temporary education service to affected learners
Home affairs	Provide temporary ID documents and replacement of other lost documents by the affected communities.
Psychosocial support organisations	Provide a trauma counselling service to affected communities
Disaster relief NGOs	Provide food, blankets and clothing to affected communities and to assist with the management of public donations of relief provisions
SPCA/Animal welfare societies	Regulate and provide for veterinary services and general animal welfare - Provide emergency pens for animals

Table 4: Allocation of responsibility based on lifecycle stages

Description of a disaster risk/hazard identified in the risk profile of the municipality (Complete one table per risk)	Primary role-player in risk reduction to be indicated here.	Supporting role-players for risk reduction to be indicated here.
	Primary role-player in preparedness to be indicated here.	Supporting role-players for preparedness to be indicated here.
	Primary role-player in response and relief to be indicated here.	Supporting role-players for response to be indicated here.
	Primary role-player in recovery and rehabilitation to be indicated here.	Supporting role-players for recovery and rehabilitation to be indicated here.

Table 2: Responsibility assignment through support activity allocation

Critical service/activity	Responsible supporting role-players
i. Provision of water to affected communities	<ul style="list-style-type: none"> • Water Affairs • Provincial and national infrastructure development programmes • Municipal entities
ii. Provision of electricity to affected communities	<ul style="list-style-type: none"> • Energy • Municipal entities
iii. Provision of sewerage to affected communities	<ul style="list-style-type: none"> • Provincial and national infrastructure development programmes • Municipal entities
iv. Provision of transport to affected communities	<ul style="list-style-type: none"> • National, provincial and municipal roads entities
v. Provision of roads and bridges	<ul style="list-style-type: none"> • National, provincial and municipal entities
vi. Storm water systems	<ul style="list-style-type: none"> • Provincial and national infrastructure development programmes • Municipal entities
vii. Housing (emergency or temporary housing)	<ul style="list-style-type: none"> • National, provincial and municipal (housing) human settlement entities
viii. Public buildings and infrastructure	<ul style="list-style-type: none"> • National, provincial and municipal public works
i. Environment management	<ul style="list-style-type: none"> • Environmental entities National, provincial and municipal
ii. Nature conservation	<ul style="list-style-type: none"> • National, provincial and municipal Nature conservation entities
iii. Agriculture	<ul style="list-style-type: none"> • National and organs of state
iv. Water	<ul style="list-style-type: none"> • Water Affairs/MIG Programme (municipal entities)
v. Forestry	<ul style="list-style-type: none"> • Forestry
i. Emergency relief	<ul style="list-style-type: none"> • National/provincial Social Development organs of state
ii. Citizen control (passports and ID documents)	<ul style="list-style-type: none"> • Home Affairs
iii. Education	<ul style="list-style-type: none"> • National and provincial organ of state
iv. Health	<ul style="list-style-type: none"> • National and provincial organ of state
v. Tourism	<ul style="list-style-type: none"> • National, provincial and municipal entities
i. Fire and rescue	<ul style="list-style-type: none"> • Municipal fire brigade service • Cooperative Government on National/ Provincial level
ii. Potential care (emergency medical service)	<ul style="list-style-type: none"> • National, provincial and municipal health entities
iii. Law enforcement	<ul style="list-style-type: none"> • Police • Defence Force • Provincial and municipal law enforcement authorities • Provincial /municipal traffic authorities
i. Provision emergency and related communication, infrastructure	<ul style="list-style-type: none"> • National department of communications • National, provincial and local media (press/radio/television/internet)
ii. Telephone/cellular phone	<ul style="list-style-type: none"> • Telecommunication

► While primary responsibility for dealing with a hazard can be assigned to a specific organ of state, the impact of such a hazard will require the involvement of other organs of state that are responsible for specific activities such as humanitarian relief, infrastructure repair, emergency housing and emergency medical services. Such activities may apply to more than one hazard. Responsibility for preparedness and response should therefore also be officially assigned on the basis of responsibility for such supporting activities. Table 2 above is an example of the proposed allocation of supporting activity responsibilities to organs of state.

Table 3 on pages 22 and 23 provides an example of the allocation and clarification of response management responsibilities to a collection of stakeholders. It should be noted that the sphere or level of government from which these services are provided, may differ between countries, eg emergency medical services may be a municipal, provincial, national or private function and how such a service interacts with other services will depend on the situation in a specific country. Clarification of the responsibilities of different components and services is important in order to ensure coordination and collaboration between services.



The previously mentioned, agencies and any other co-opted organisations/services will operate as per their defined function and jurisdiction and must ensure that their efforts are also coordinated and integrated with all the other disciplines at the incident site. Therefore, they should ensure that they are represented on any joint response management structure.

The allocation of responsibility can also be done on the basis of responsibility during the different phases of a hazard life cycle, such as those used in the disaster management continuum. Table 4 on page 23 provides an example of the allocation of responsibility for a specific hazard based on responsibilities during phases of a hazard life cycle.

The table makes it clear that one hazard may become the responsibility of different parties as it moves through its life cycle.

Conclusion

In summary, this article considered responsibility in response management and different ways of assigning responsibility for different hazards, activities or phases of response management. It was shown that hazards can be assigned to organs of state to lead response management for that specific hazard. The activities that form part of a joint response to specific hazards can also be assigned to specific entities and finally the phases of hazard life cycle can also be assigned to specific parties.

Answering the question, “Who is in charge of what?” is vital for effective consequence and response management and should be answered before planning rather than during response.

This concludes this third article about response management. In discussing response management, we focused on the need for coordination and how to effect coordination. This article is also the sixth article in this series of articles about the wider consequence management practice. The next

article will focus on ‘All-hazard preparedness and response’, a methodology that argues for meaningful and reasonable standardisation of response to non-standardised impacts and consequences of hazards. 🇷🇷

SRK Consulting has been a leading Consultant in Disaster Risk Management in South Africa for the last 16 years.

We specialize in assisting government and industry in the SADC region with disaster management planning, frameworks, risk assessments and contingency planning in line with the latest legislation.

Photo Credit: Gerhard Nieuwoudt.

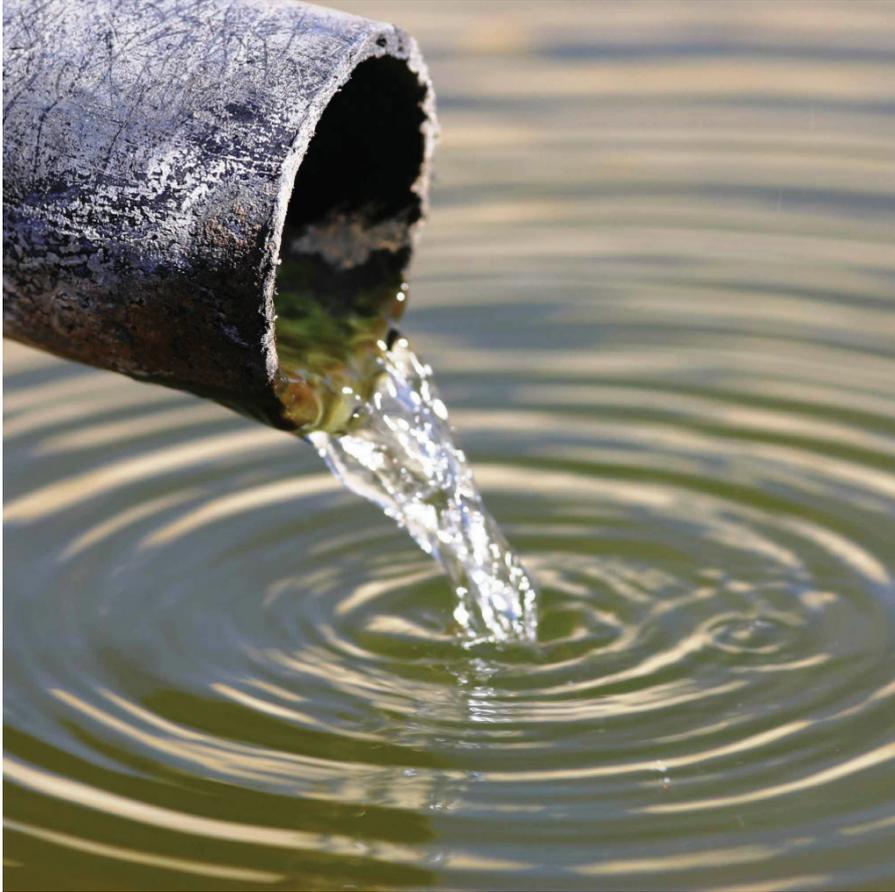
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FUTURE SCENARIOS FOR AGRICULTURAL WATER MANAGEMENT IN SOUTH AFRICA:

Andries J Jordaan (PhD) PrSciNat, PrDM, MMM, DWD



Future water management in South Africa will have a direct influence on economic welfare and political stability in South Africa and in the region. Approximately 60 percent of water in South Africa is utilised by agriculture. This figure is calculated by subtracting what can be measured from total annual water supply through precipitation. In other words, it is total precipitation minus measured bulk water supply for industry, tourism and domestic water use. Developing future agricultural water management scenarios is therefore an important tool for timely decision making for policy makers, water managers and water users.

The United Nations World Water Assessment Program (WWAP) indicates that several countries around the world are confronted with water scarcity as a critical problem to socio-economic development. By 2035, more than a third of the world population will be living in countries that will have to adapt to high

water stress, including countries and regions that influence global economic growth (Water Resources Group, 2009). Currently, water management in South Africa and other developing countries in Africa, has become increasingly challenging due to the complexities arising from the functioning of hydrological cycles, climate change, socio-economic factors and diverse stakeholder perspectives, needs, values and concerns associated with the use of water for various purposes (Gain and Giupponi, 2015). In particular, complex interactions and dynamic feedbacks between biophysical, political, security and environmental systems make it difficult to understand the potential consequences of decisions made by policy makers (Stave, 2015).

The Water Research Council (WRC) appointed the University of the Free State with Prof Andries Jordaan as project leader to develop future water management scenarios for SA. Other

project team members are Dr Abiouden Ogondji, Prof Sue Walker, Prof Anthony Turton, Me Chantell Illbury and Mr Sebastian Yong as the PhD candidate on the project. This article highlights some of the preliminary results from a first round of workshops.

Previous studies on water resource management have demonstrated that scenarios are also useful to account for uncertainties associated with climatic, demographic, economic, social, technical and political conditions that affect the performance of water resource systems, including their effects on future water availability, water demand and water management strategies (Gallopín & Rijsberman, 2000; Alcamo & Gallopín, 2009 and Gallopín, 2012). The fundamental goal of water resource planning and management is to match the demand for water by the socio-economic system with the supply (quantity and quality) of the water system through administrative control and management (water regulations/laws and infrastructure), without compromising ecosystem sustainability (WWAP, 2000).

According to Gallopín (2012), scenario development typically involves the following elements: characterisation of the current situation, with a diagnosis of the starting state of the scenarios, focused on the focal issue or problem under consideration, water in this case, identification of major driving forces that represent the key factors, trends or processes that influence the situation, focal issue or decisions that propel the system forward and condition the story's outcome. Some of these forces are invariant eg they apply to all scenarios and to a large extent predetermined (Shiklomanov, 1997). Some of the driving forces may represent critical uncertainties, the resolution of which can fundamentally alter the course of events. These driving forces or drivers, for short, influence but do not completely determine the future. Thus, while the initial state of the drivers is the same in all scenarios, the trajectory of the system follows a different course in each one. The formulation of the plot, the current state, driving

forces, strategic invariants and critical uncertainties form the backbone of the scenarios. In addition, all scenarios unfold according to an internal logic (the plot) that links the various elements (Gallopín, 2012).

Systems thinking and planning

Systems thinking is one of the most innovative tools necessary for identifying drivers of change, policies and strategies that will inform water planning in a face of uncertainties and a constantly changing socio-economic and ecological environment. Systems thinking can be very useful in water planning because it will inform policymakers and all stakeholders in the water and agricultural sectors about the current water situation in the country and provide valuable insights to support future water policies especially regarding the agricultural sector and agricultural development in South Africa. System dynamic modelling can provide a learning tool for policy-makers to improve their understanding of the long-term dynamic behaviour of the water agricultural sectors and as a decision support tool for exploring plausible policy scenarios necessary for

sustainable water resource management and agricultural development.

Drivers for change

Ten clusters were identified from literature with each having its influence on what resource management in South Africa. The ten of clusters, which have varying influences and impacts agricultural water management are (i) natural/ecological cluster, (ii) social cluster, (iii) economic cluster, (iv) cultural cluster, (v) human cluster, (vi) infrastructural cluster, (vii) political cluster, (viii) technological cluster, (ix) institutional cluster and (x) organisational cluster. A total of 62 drivers were also identified under each of the ten clusters as the drivers that will influence change in water resource management in South Africa. The list of all the drivers and clusters was submitted for discussion among different stakeholders and review through expert consultations. Stakeholders and experts in the agricultural and water sectors were given permission to propose alternative clusters and drivers, which they thought will have the biggest influence in water resource management and were not listed in the document presented to

them. The objective of the expert consultations after different stakeholder workshops was to validate the degree of importance of each cluster and driver of change and to gain an informed opinion on the likelihood of the drivers and clusters influencing agricultural water resource management in future.

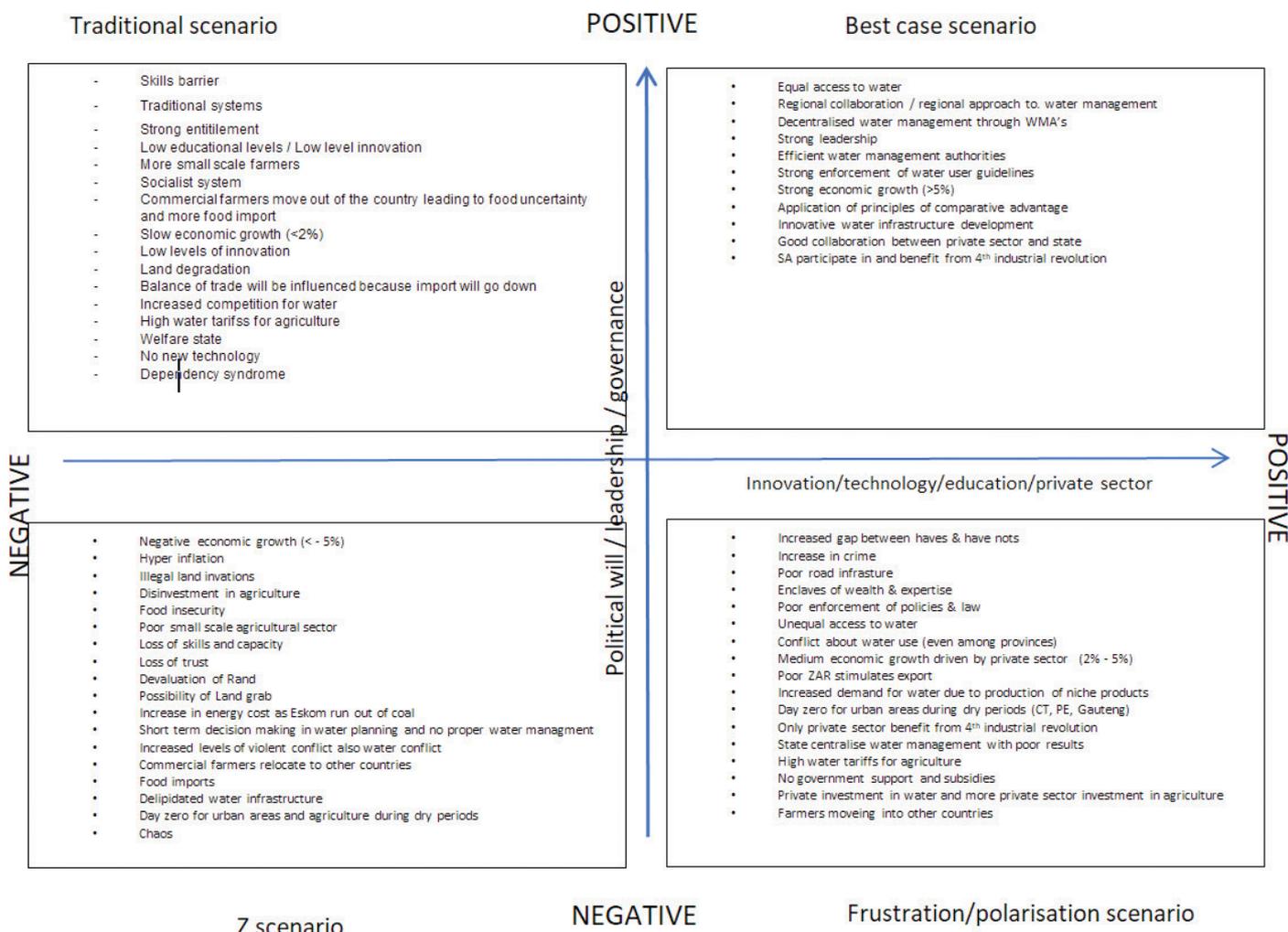
After various workshops, national symposium and expert consultations, various clusters and drivers of change were identified as important to agricultural water management in South Africa and based on these, the project team could build preliminary scenarios for South Africa.

Preliminary scenarios

The results of the preliminary set of scenarios are presented in Figure 1. It is important to note that these are the first set of scenarios from the discussions of the project team and hence these are just the starting point.

The two axis identified are political will and support, leadership and good governance on the vertical axis with innovation, technology and private sector initiatives on the horizontal axis.

Fig 1: Preliminary agricultural water scenarios for South Africa





Workshop participants from National African Farmers Union (NAFU)



Workshop with leaders from African Farmers Association of South Africa (AFASA)



National Water Symposium in Pretoria with Dr John Purchase from AGBIZ SA giving his inputs

We identified four basic scenarios. The four scenarios are (preliminary names) (i) Z or chaos scenario, (ii) frustration or polarisation scenario, (iii) traditional scenario and (iv) best-case scenario.

The Z scenario is the result of poor leadership in both the political and water environment with low education standards and a private sector that withdraw from the national discourse due to extreme polarisation between private sector and Government. The country will experience continuous recession with negative economic growth. Unemployment will increase dramatically and the safety and security situation will get out of hand. Violent civil unrest will be a daily occurrence with security forces ie the South African Police Service (SAPS) and the South African National Defence Force (SANDF) using deadly force to control the masses. Most commercial farmers will abandon their farms and move to neighbouring and other countries. More than half of the population will be food insecure. South Africa will become a net importer of food and the World Food Programme will become active in South Africa to help avoiding famine amongst the poor. Water infrastructure is not maintained and rivers and dams are heavily polluted. This is the chaos scenario, very similar to Zimbabwe today.

The frustration or polarisation scenario is the results of poor governance and political leadership with a strong private sector that is still functioning in a hostile political climate. More people are educated and civil society take responsibility for its own functioning. The gap between the haves and have nots will continue to increase with the poor totally depended on the State who is nationalising all resources. We will see slow economic growth of about two percent, which is mainly driven by the private sector. Only the private sector will benefit from the advantages of the fourth industrial revolution with the State still working with outdated systems and not able to apply regulations and policies. The private sector, however, will invest the bulk of their funds in other countries. The private sector will take responsibility for water management where it is possible but many towns and cities will experience day zero scenarios during dry periods because of poor management at all governance levels. Agriculture will be heavily taxed with high water and electricity tariffs. Production from commercial agriculture will slow down with many farmers investing in other countries. South Africa will become a net importer of staple food five out of 10 years.

WHY DISASTER READINESS IS CRITICAL FOR AFRICA AND WHAT THE COMMONWEALTH IS DOING ABOUT IT

By The Rt Hon Patricia Scotland QC, Commonwealth Secretary-General

Five months ago, Cyclone Idai ripped through the Southern African region, causing a massive humanitarian disaster that affected three million people. More than a thousand perished, while 200 000 lost their homes, many of whom are still to this day living in refugee camps.

Economic losses were estimated at more than \$1 billion across the affected countries, Mozambique, Malawi, Zimbabwe and Madagascar. However, the devastating impacts of such disasters, especially for Least Developed Countries (LDCs) and small states in Africa, tend to be deeper and more far-reaching than initial reports would indicate.

The consensus among scientists is that extreme weather events such as droughts, floods, cyclones and landslides, are now occurring with increased frequency and greater intensity. There are long term consequences such as desertification, erosion of arable land and changes in ecological balance, which can prove difficult to reverse. As a result of climate change, there is a heightened risk that while vulnerable Commonwealth states are recovering from one natural disaster, another will strike.



The consensus among scientists is that extreme weather events such as droughts, floods, cyclones and landslides, are now occurring with increased frequency and greater intensity

For instance, Mozambique was still reeling from the impact of Cyclone Idai in March when Cyclone Kenneth, the strongest in the country's history, bore down barely six weeks later. In fact, there have been no fewer than 13 emergency events in Mozambique since 2015, mirrored by 12 in neighbouring Malawi. Indeed, 109 disasters recorded in the country over the past 50 years have incurred more than \$1,15 billion in economic damage.

Statistics such as these demonstrate the vital importance for all our member countries of planning long term strategies to manage disaster risks and of building resilience through disaster preparedness, as was acknowledged by Commonwealth Heads of Government when they met in 2018.

They affirmed their commitment to the Sendai Framework for Disaster Risk Reduction, the international agreement ▶

The traditional scenario is a scenario where political leadership take strong action to reduce corruption and increase productivity and good governance in the State. The private sector, however, views it as a short-term trend and due to low education levels it starts investing more in other countries. Due to historical experience between Government and private sector, distrust remains high between private sector and Government. This scenario will see slow economic growth with less than two percent and little innovation in the water sector. Farmers do not trust Government and food production will slow down with many farmers investing in other countries. The smallholder sector will increase dramatically with Government enforcing more socialist policies and became a welfare state. Land and other resources are nationalised with new farmers having no title deeds for their

land. Food insecurity will increase and South Africa will become a net importer of staple food seven out of 10 years.

The best-case scenario is the result of strong leadership, good governance, more people receiving good education and a private sector who works together with Government to reduce unemployment rates and increase efficiency in production and water use through innovative new technologies. Economic growth increases to more than five percent. All sectors and people have equal access to resources. The smallholder sector received good extension support from Government and commercial agriculture actively assists with the mentoring of new farmers. South Africa remains a net exporter of food even during dry years. The exchange rate is stable and global markets reacted positively to developments in South Africa.

New water infrastructure is built with the newest technologies. Current infrastructure is well maintained and pollution levels in all rivers and dams are within 'specs'. The country as a whole benefited from the fourth industrial revolution.

Conclusion

Scenario building is an important planning tool and is also an integral part of risk assessment. The project team believe that the water management scenarios developed during this research will enhance resilience against climate extremes and climate change provided that policy makers and practitioners understand implications of policy and management decisions.

The project continues until the end 2020 and refinement of the different scenarios are expected as more information became available. 🌍



Mozambique was still reeling from the impact of Cyclone Idai in March 2019



There have been 13 emergency events in Mozambique since 2015, mirrored by 12 in neighbouring Malawi

► for mobilising governments, private sector and other stakeholders to reduce risks and build resilience. By doing so, our leaders acknowledged that rather than merely responding after disaster strikes, it is more cost-effective and prudent to invest beforehand in prevention, protection and preparation.

Yet disaster risk reduction remains a relatively low priority for international development finance. Apart from the costs of post-disaster reconstruction and response, of every \$100 spent on international aid in the past two decades, only 40 cents have been spent on pre-disaster risk management.

Moreover, the field of disaster risk finance is complex and evolving, making it even harder for small states and least developed countries (LDCs) to tap into the limited funding available. Information is fragmented, and donors and lenders often have widely varying procedures and requirements that need to be navigated in order to unlock finance.

Bringing clarity to disaster risk finance
To tackle these impediments, and to help create a more streamlined and integrated

approach to accessing funds, the Commonwealth will soon be launching a new disaster risk finance portal. This web-based platform, designed to make it easier for capacity-constrained governments to gain access to the funding they so urgently need, will be ready for preview when our annual Commonwealth Finance Ministers Meeting, convenes in Washington DC this October with Cyprus in the chair.

As well as helping governments to find what disaster finance instruments are available, the portal will assist them with identifying those that are most suited to their particular needs and circumstances. A one-stop-shop, with information collated from a range of sources and clearly presented, will save governments time and effort and help them to make more informed decisions on disaster preparedness and response.

The theme for our Commonwealth Finance Ministers Meeting, 'Avoiding Debt Crises', also strikes a chord, as disasters push many countries into taking on emergency loans to rebuild and recover. For most low and middle-income countries, such public debt easily becomes unsustainable and

makes them vulnerable to the additional high risk of debt distress.

The Commonwealth has an impressive record of successful advocacy to bring to international attention the difficulties associated with managing debt issues and of offering practical solutions. Last month, we launched Commonwealth Meridian, our state-of-the-art sovereign debt management software. It builds on the successes of the Commonwealth Debt Recording and Management System (CS-DRMS), which over recent years has been used by more than 100 agencies, including the finance ministries, treasuries and central banks of 60 countries, to manage more than \$2.5 trillion of public debt.

This complements the work of the Commonwealth Finance Access Hub set up in 2016 to help small and vulnerable states make successful funding applications for projects that will help them adapt to climate change and mitigate its impact. To date, the hub has helped countries gain access to \$25.3 million, with a further \$367.4 million in the pipeline. It does so by embedding long term specialists within ministries to provide expert advice and to build local capacity for the longer term.

Tools such as these, together with many other projects and programmes and advocacy strategies, are components in a suite of support offered by the Commonwealth collectively so that all our members are better equipped and ready to cope with disasters, including those related to climate change.

Our combined Commonwealth purpose is to reduce the number of people being pushed into poverty and food insecurity by recurring natural disasters and whose opportunities to share the benefits of inclusive and sustainable progress are impaired when economic growth falters. Where the planning and wherewithal to assist people with recovery from trauma and to rebuild their lives is lacking, community cohesion and nation-building can also be severely compromised and set back. Without sustained action to mitigate risks and build resilience, hopes of achieving the Sustainable Development Goals by 2030 are slender.

By mobilising multilateral action, particularly in support of those who are marginalised or more vulnerable, with the stronger working alongside the less secure, we are able to build defences against disaster which may be needed by any of us at any time. So the Commonwealth shines as a beacon of hope for a more harmonious world and for cooperation to sustain the health and well-being of our planet. 🌍

UNDP AND MOZAMBIQUE GOVERNMENT LAUNCH POST DISASTER RECOVERY FACILITY FOR CYCLONES IDAI AND KENNETH

The United Nations Development Programme (UNDP) and the Government of Mozambique formally signed an agreement for UNDP Recovery Facility that will help fast track recovery and build resilience following the devastation unleashed by Cyclones Idai and Kenneth on 14 August 2019. The main pillars of this innovative programme are: (1) Livelihoods and Women Economic Empowerment; (2) Housing and Community Infrastructure and (3) Institutional Strengthening of the Reconstruction Cabinet.

The programme is an agile mechanism to implement short-to-long term recovery activities that will contribute to addressing the root causes of vulnerability and build resilience to future disasters. It will pay particular attention to women and vulnerable groups. This initiative can have a transformational impact on Mozambique given its high vulnerability to climate change. Indeed, Mozambique is regarded as one of the most at-risk countries in Africa to disasters. It ranks third among African countries most exposed to multiple weather-related hazards and suffers from periodic cyclones, droughts, floods and related epidemics.

Speaking at the event, the Minister of Public Works, HE Joao Machatine thanked development partners for their support to the Government and people of Mozambique in responding to the emergency and reconstruction following the cyclones. He commended UNDP for its strong support and commitment immediately after the disasters. Minister Machatine stated, “I wish to thank UNDP for this initiative. This will have an impact on the affected populations. When we talk about rebuilding infrastructure it is paramount that we also focus on rebuilding people’s lives and their livelihoods. This Recovery Facility gives a great focus on this aspect. This is very timely and the Government is committed to ensure that all resources mobilised for reconstruction are well managed with accountability mechanisms based on international standards.”

The UNDP Resident Representative ai Alfredo Teixeira expressed his pleasure on signing the programme noting that it is the start of a long journey and UNDP



is committed to an enduring partnership with Mozambique. Teixeira also committed to an action agenda to deliver results including for those left furthest behind. He said, “Building Back Better in these times of climate change is no longer an option but an imperative. We in UNDP stand ready to support the Government in advancing a transformational agenda for Mozambique”.

In line with the Post-Disaster Needs Assessments (PDNA), the facility will adopt a comprehensive approach to effectively meet the needs of the disaster affected population in the provinces of Sofala and Cabo Delgado in coordination with key development actors to ensure Mozambique’s rapid restoration of development pathways in a manner that builds resilience.

Teixeira noted that UNDP is committed to working with development partners and with members of the UN Family playing a key role in implementation. Development partners expressed a keen interest in participating in this facility. The EU Head of Development Cooperation in Mozambique, Ms Isabel Faria de Almeida, in her comments, strongly supported the initiative and the innovative approach.

The Facility was launched in a signing ceremony officiated by Minister Machatine and UNDP Resident Representative ai and attended by the UN Resident Coordinator, development partners, government officials, representatives from UN agencies among others. 🇺🇳

UPCOMING EVENTS

SEPTEMBER 2019 - DECEMBER 2019

18 - 19 September 2019

Disaster Management Institute of Southern Africa (DMISA) Annual Conference

The annual conference of the institute is the biggest annual disaster management conference in Africa and routinely attracts more than 300 delegates. The institute is recognised as the mouthpiece of the disaster management profession in Southern Africa. The conference provides an annual opportunity for a diverse range of stakeholders in disaster management from across Africa to gather and share skills, knowledge and experience.

Venue: ATKV Resort Hartenbos in the Mossel Bay Municipality, Garden Route District

For more information contact: Karin Muller

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20 - 21 September 2019

1st Eastern Cape workshop on Ethics in Disaster Situations

Rhodes University, Makhanda, South Africa, in collaboration with The International Emergency Management Society, Stenden South Africa and the South African Department of Rural Development and Land Reform, hosts the first Eastern Cape workshop on Ethics in Disaster Situations

Venue: Rhodes University, Makhanda, Eastern Cape

For more information email: roman.tandlich@gmail.com

25 - 27 September 2019

6th International Conference on Disaster Management and Human Health Risk: Reducing Risk, Improving Outcomes

The conference provides a forum for the exchange of information between academics and practitioners, and a venue for presentation of the latest developments

Venue: Ancona, Italy

For further information visit:

www.wessex.ac.uk/conferences/2019/disaster-management-2019

1 - 3 October 2019

National Geoscience Conference 2019

The technical programme of NGC 2019 consists of oral and poster presentations on all aspects of geoscience, environment and technology related to the theme. This year's theme is 'Geosciences for the Earth Sustainability'

Venue: Sabah, Malaysia

For further information visit:

<https://nationalgeoscience.wixsite.com/ngc2019>

13 October 2019

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

16 - 18 October 2019

Integrated Disaster Risk Management (IDRIM) 2019 Conference

The 2019 annual event for researchers and practitioners in integrated disaster risk management (IDRIM) will focus on the issues of knowledge-based disaster risk management: Broadening the scope by smart territories for sustainable and resilient cities and organisations

Venue: Nice, France

For further information visit: www.idrim.org

23 - 24 October 2019

3rd International Conference on Natural Hazards and Disaster Management

natural hazards and disaster management is playing an important role to create awareness and providing a platform to share and discuss on different types of natural hazards, significance of early warning systems and risk management strategies

Venue: Tokyo, Japan

For more information visit:

www.naturalhazards.conferenceseries.com

6 - 10 November 2019

3rd International Water Congress

The aim of the 3rd International Water Congress is to gather academicians, policy makers, independent scholars and researchers to share their knowledge, new ideas as well as to discuss future development in water policies

Venue: Sarajevo, Bosnia and Herzegovina

For more information visit: www.iwc.web.tr

9 - 12 November 2019

World Bosai Forum 2019

World Bosai Forum is an international forum on disaster risk reduction held in partnership with the International Disaster and Risk Conference. Officials and experts from Japan and overseas, including international organisations, governments, private sector, academia and media, as well as local citizen participate in the forum

Venue: Sendai, Japan

For more information visit: www.worldbosaiforum.com/2019

9 - 10 December 2019

International Conference on Global Warming and Natural Disasters

The conference deals with several features of the assessment of hazard and risk of land sliding and presents a summary review and a classification of the main approaches that have been developed world-wide. The first step is the part between qualitative and quantitative methods

Venue: Bangkok, Thailand

For more information visit: <https://globalwarming-naturaldisaster.environmentalconferences.org/>

THE DISASTER MANAGEMENT INSTITUTE OF SOUTHERN AFRICA (DMISA)

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- **R15 million** invested in municipalities.
- More than **16 000 lives** protected.
- More than **4 000 smoke alarms** installed in vulnerable communities.
- **200 Firefighters** trained to prevent and fight fires.
- **10 emergency services** coordinated to improve relief response.

Santam supports 43 municipalities to increase their capacity, skills and competence to manage disasters and save lives.