

# DISASTER MANAGEMENT

Official Journal: Disaster Management Institute of Southern Africa



Volume 2 No 4



## DROUGHT INDICATORS AND DROUGHT CLASSIFICATION

**DISASTER  
RISK  
REDUCTION  
2018**

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Enquiries: Ms K Muller - Tel +27 (0)11-822-1634 - Fax +27 (0)86 652 8066  
E-mail: [karin@disaster.co.za](mailto:karin@disaster.co.za) - Web: [www.disaster.co.za](http://www.disaster.co.za)



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# DISASTER MANAGEMENT

## DMISA

### President

Bafana Mazibuko

### Deputy President

Mduduzi Nxumalo

### Councillor: Portfolio - Journal

Schalk W Carstens

### Disaster Management Journal Editor

Lee Raath-Brownie  
lee@fireandrescue.co  
Cell 082 371 0190

### Journalist

edit@fireandrescue.co

### Advertising

advertising@fireandrescue.co

### Design and layout

Marc Raath  
marc@fireandrescue.co

### Finance

Vicki Jacob  
accounts@fireandrescue.co

### Circulation

Vicki Jacob  
subs@fireandrescue.co

### Secretary

Vicki Jacob

### Administration

Mirriam Moroane

### Contributions

Dr Mmaphaka Tau  
Dr Johan Minnie  
Schalk Carstens  
Colin Deiner  
Dr Andries Jordaan  
Tinus de Beer  
Andries Fourie  
Alice Ncube  
Yonas T Bahta

### Publisher

Lee Raath-Brownie  
FIRE AND RESCUE INTERNATIONAL  
Tel 011 452 3135/6  
Fax 086 671 6920  
Box 8299 Greenstone 1616  
www.fireandrescue.co

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*Bafana Mazibuko*

### Dear Reader

I must admit that the time is moving very fast. Just recently, we were together with some of you in the 34th Disaster Management Institute of Southern Africa (DMISA) Conference of 2017 in the Nelson Mandela Bay Metropolitan Municipality, Eastern Cape. We are now already working with the Executive Committee to host the DMISA 2018 Conference in Kopanong Hotel and Conference Centre in the City of Ekurhuleni.

I must acknowledge that it has been long since the last time the Institute has

hosted any conference in the Gauteng Province. If my memory serves me well, the last conference in Gauteng Province was in 2004 at Gallagher Estate in Midrand, some 14 years ago. Therefore, the Institute is excited to be back in the province after so many years.

Members and readers should also note that our 2018 conference coincides with our elective year. The current office bearers, after the conference, would have already served their two years. The new President, the Executive Committee and Councillors will have to be elected this year. In anticipation of this process, I will like to wish all members who will be elected into their new positions in the Institute well for the next two years.

In view of our 2018 conference and the anticipation for the new office bearers, the year 2018 has already propelled our disaster management practice to the next level locally, regionally and globally. Locally, we acknowledge the nomination of Dr Mmaphaka Tau, the Head of National Disaster Management Centre, as a chairperson for Southern African Development Community (SADC) Region on disaster management stream. Our country's privilege for chairing the regional disaster management stream has already resulted in South Africa hosting a Regional Disaster Risk Reduction Conference in Pretoria from 26 to 28 March 2018 under the theme, 'Resilience building and sustainable development in the Southern African Development Community (SADC) region'.



Internationally, we have noted the 12th Session of the African Working Group on Disaster Risk Reduction that took place in Bahir Dar (Ethiopia) on the 13 and 14 March 2018. In the same month on the 14 and 15 March, the United Nations International Strategy for Disaster Reduction (UNISDR) also held a Workshop called Global Capacity Development Strategy in Geneva to monitor the progress made by countries in achieving the Sendai Framework targets.

Colleagues, having alluded to the approaching end of time for the current administration of the Institute, allow me at this point to report on the activities of the current Executive Committee.

On behalf of the Institute, the portfolio holder of Partnership, International Relations, Public Relations and Media Liaison held a meeting on the 26 July 2018 with the Head of Centre for Gauteng Provincial Disaster Management Centre (PDMC) ie Dr Elias Sithole, to finalise both parties inputs into the Memorandum of Understanding (MOU). The MOU is expected to be signed off before the current year ends. However, it must be reported that the Gauteng Provincial Disaster Management Centre will be an equal partner in the hosting to the 35th DMISA Conference 2018.

The Institute has also been engaging with other stakeholders. The engagement took place with South African Local Government Agency (SALGA) to formalise their partnership based on a MOU. The follow up meeting with SALGA is planned for 3 August 2018 in Pretoria. Moreover, the Institute is trying to get an audience with SALGA President Mr Parks Tau through his office.

On 21 February 2018 the Executive Committee held a meeting in the Western Cape with the appointed Head of the National Disaster Centre (NDMC), Dr Mmaphaka Tau. Part of the discussions reflected on the issue of the MOU, following which the NDMC promised to respond to the Institute regarding this matter soon. It during these discussions where the following matters were concretised with the NDMC:

- The implementation of the 2017 Conference resolutions
- SADAC trans-border discourse on disaster risk reduction
- Multi-hazards incident management system
- The use of the green lights by disaster management
- The implications of the Sendai Framework for municipalities and
- Disaster management support team



*DMISA attended SADC workshop on DRR held in March 2018*

It is also encouraging to report to members and readers that NDMC is our partner in the 2018 Conference.

On regional matters, equity and recruitment, the Institute can report that that six of the seven regions successfully staged their annual general meetings for 2018. The results of which indicates that out of the six regional elective meetings, four regions elected female chairpersons, which speaks volumes in terms of the intention of the Institute on matters of equity.

The readers and members will attest to the fact that the professionalisation of the disaster management function is in full swing. Just this year, some of us who have designations from two years back, were asked to provide evidence that we have collected the required 20 Continuous Professional Development (CPD) points from our office. Moreover, the administration of our website in terms of uploading recent developments on our Institute has been progressing very well.

The heartbeat of our Institute has always been its finances, administration, sponsorship and conferences. On finance, administration, sponsorship and conferences coordination, the chairperson of the Executive Committee, with the assistance of our administrator, are continuing serving our Institute with dedication and commitment as expected of them. The report that served in our last Executive Committee meeting on the 26 July 2018 indicated that our organisation is in a healthy financial state.

The portfolio holder of our training, skills development, standards and tours is

busy exploring how best to institute a disaster management tour for the country. Moreover, the Membership Coach's Manual has been divided into two parts ie a membership application manual and a CPD manual to assist members on these two processes. The second technical training board meeting was held on the 22 March 2018 on the training matters.

Still on the same portfolio matters, readers and members must appreciate that the 2017 conference resolutions have been converted into an action plan format to assist relevant stakeholders to action them. The same resolutions have been passed on to all relevant and responsible stakeholders.

On matters of policy and legislation, the Institute has been hard at work to amend its constitution so that it is in line with the requirements of professionalisation. It is hoped that the process will be finalised in the general meeting after the 2018 Conference in Kopenong, Benoni.

Before I conclude, I want to sincerely extend my gratitude to this journal for allocating space for us to communicate to the public and our members on matters of our Institute. The marketing impact this journal provides for our Institute and industry to keep readers informed. As representatives of the Institute, we trust that we will continue to exploit this space to the benefit of the public and our readers on matters of our Institute and the disaster management sector.

**Bafana Mazibuko**  
**DMISA President**



Schalk Carstens

### DMISA Councillor: Journal

As a full-time employed disaster management official working in government, a part time lecturer as well as a member of this institute for many years, I am proudly South African because of our national centre's leadership in the international disaster risk reduction arena.

### South Africa as an international stakeholder

Our head of the (South African) National Disaster Management Centre (NDMC), Dr Mmaphaka Tau, has been the chairperson of both the Southern African Development Community (SADC) as well as the BRICS (Brazil, Russia, India, China, South Africa) Disaster Risk Reduction Committee meetings held in South Africa this year.

I had the privilege to be invited to two international engagements to represent Disaster Management for the Western Cape. The one was the Southern African Development Community (SADC) meeting that took place the end of March 2018 in Tshwane, which was hosted by the NDMC. The other meeting was the BRICS (Brazil, Russia, India, China and South Africa) meeting that was held towards the end of June 2018 and hosted by Cooperative Governance and Traditional Affairs (COGTA) in Buffalo City.

Dr Tau and his (NDMC) team did us extremely proud and have shown that the South African Government can stand its ground when it comes to the implementation of disaster risk management.

As an example, in the context of where South Africa has to fit into the bigger picture of the world's cooperative

agreements such as BRICS, we, as a country, is only a minute part of a massive organisation. South Africa has only two percent of the total population of the BRICS countries, which accounts to approximately three billion people in total. In terms of United Nations Statistics (UNStats) 2016, the population variations are as follows, China 1,4 billion, India 1,3 billion, Brazil 200 million, Russia 144 million and South Africa at a mere 58 million. In the bigger context, BRICS amounts to 42 percent of the world's total population.

As the very smallest country in the BRICS family, South Africa has shown to be capable for the implementation of a very progressive Disaster Management Act. This was evident in the management of the recent multitude disaster events such as the extreme storm, the huge devastating fires in the Eden District Municipality especially in Knysna (June 2017) as well as the catastrophic drought currently being experienced in the three Cape provinces that has led to the first National State of Disaster Declaration.

The NDMC team, under leadership of Dr Tau, has laid the foundation for future disaster cooperation between the SADC and the BRICS countries. You will be able to read about his vision for international cooperation in his article.

Disaster management has made phenomenal growth in South Africa, which can be seen by the numerous disasters managed in the recent years. However, the professionalisation and the appointment of a professional body for disaster management remains a gap in the country. I believe that such a professional body will take disaster management to the next level. Which brings me to my next topic...

### Disaster Management Institute of South Africa as the professional body

I wish to mention that DMISA has now grown into a fully fledged professional body, which is supporting the professionalisation of the disaster management discipline. DMISA has been recognised by the South African Qualifications Authority (SAQA) as the professional body for Disaster Management in South Africa and has successfully applied for four Disaster Management (SAQA) designations namely the Disaster Management Technician, Disaster Management Associate, Disaster Management Practitioner and the highest profession being the Disaster Management Professional.

The critical question is, "Why can't DMISA officially be recognised as the

Professional Body as referred to in the National Disaster Risk Management Education Framework which was published by the NDMC in March 2013?" This official publication as mentioned on page 50 (paragraph 7.3.1), states the primary functions of such a 'professional body' as:

- Setting standards for education, training and professional competence
- Evaluating, quality assuring, and accrediting educational qualifications
- Maintaining a register of registered professionals
- Assessing the competency of registered professionals
- Setting and enforcing the codes of conduct and practice
- Providing disaster risk management (DRM) leadership and
- Being the voice for the Profession

Over and above these functions, the performance indicator for the professional body indicates that the NDMC should "Collaborate in the validation and or the establishment of DRM professional body (inclusive of business case for such a DRM professional body)". I am of the opinion that DMISA already has ticked almost all (if not all) the boxes of this 'DRM Professional Body'. DMISA has over the past 30 years grown from an association to an institute and is currently a non-statutory body, which is the only organisation recognised by SAQA for the registration of Disasters Management officials.

The next critical questions are then, "What more must DMISA do to comply with above mentioned indicator; if not found to be adequate, what body should then be established as the official Professional Body and when will this happen?"

The Disaster Risk Management, Education and Training Framework has been mandated as per enabler 2 of the Disaster Management Framework for the promotion of a culture of risk coordination among stakeholders by capacitating them through integrated education, training, awareness as well as research. This enabler gives practical application to sections 15(i)(h), 30(i)(h) and 44(i) of the Disaster Management Act, which also delegates this responsibility to provincial and municipal centres. Furthermore, the National Disaster Risk Management, Education and Training Framework must identify approaches for education and training aimed at integrating DRM with the different levels of education systems and also identifies measures to maintain continued learning of (Disaster Management) volunteers and professionals.



# UPDATES AND NEWS

## FROM THE NATIONAL DISASTER MANAGEMENT CENTRE

The National Disaster Management Centre (NDMC) is hard at work in executing its legislative obligations by promoting an integrated and coordinated system of disaster management amongst national, provincial and municipal organs of state, statutory functionaries and other role players involved in disaster management. Since January this year, the NDMC has been involved in a number of projects and initiatives to realise this objective. This journal provides me with the opportunity to provide a high level update to stakeholders on the activities of the NDMC during this period to reflect on some key aspects.

### Drought management

The recurring drought and its impact has largely dominated the agenda of the NDMC. Since October 2015, the NDMC, through the National Joint Drought Coordination Committee (NJDCC), essentially played a supporting role to the affected provinces and local governments in the management and coordination of the drought. However, since 13 February 2018, national government, through the NDMC, took over the primary responsibility for the management and coordination of the drought, when I reclassified the drought as a national disaster. Our joint efforts intensified when the Minister declared a national state of disaster on 14 March

2018. The declaration of a national state of disaster enabled the respective spheres of government to mobilise and reprioritise resources in their existing allocations, expedite procurement processes and accessed R433,524 million from the respective disaster grants to implement augmentation and other immediate relief projects. Of this amount, R348,836 million was transferred during 2017/18 financial year and R84,678 million was transferred from the Provincial Disaster Grant during 2018/19 financial year.

During the ensuing months, the Inter-Ministerial Committee on Drought and Water Scarcity provided decisive leadership to oversee the implementation of projects aimed at addressing the immediate impact of the drought. In this regard, Government-led multi-disciplinary measures implemented effectively mitigated the droughts' effects and together with good rain, falling in the late autumn and early winter, broke the back of the drought. The IMTT made it clear that drought remains a perennial feature of the Republic's ecological system and evidence is mounting that droughts of the future will be aggravated by climate change and climate variability. Given the latter view, government is already taking concerted action through the introduction of the Climate Change Bill and the Climate Smart Agricultural Strategic Framework for public comment. Stakeholders are urged to peruse



Dr Mmaphaka Tau

these documents, provide input and start with the conceptualisation of the principles these documents embody to ensure that the impact of climate change is mitigated and adapted to. The following aspects were highlighted pertaining to the drought.

1. The Western Cape recorded favourable amounts of rainfall. However, several pockets of dryness remain in the province, the Eastern Cape, Northern Cape, KwaZulu-Natal and North West. Early predictions, albeit with low confidence, shows incidents of above

According to DMISA's approved professional registration process, disaster management officials are required to sign the following "Pledge", before they are registered to practice:

- "That I will diligently abide with the DMISA Code of Conduct for the Disaster Management profession, which I have signed with my application for professional registration and will strive to adhere to the requirements of the DMISA Code of Practice for Disaster Management practitioners".
- That I will endeavour to reduce disaster risks through reducing hazards and vulnerability and increasing capacity, sustainability and resilience in line with national, regional and international imperatives expressed in national legislation, international agreements and standards and international best practice.

- That I herewith affirm my commitment to the principles of the Humanitarian Charter as well the minimum standards contained therein that aims to achieve levels of service as stipulated in the 1949 Geneva Convention and their Additional Protocols of 1977 as well as other international conventions, protocols and legal and legislative instruments for the improvement and alignment of disaster risk reduction, preparedness, response, recovery and rehabilitation initiatives.
- "That I will always strive to uphold the above principles and commitments both in my official and private capacity".

To leave you with some food for thought, I believe that South Africa will benefit greatly by recognising DMISA as the 'Professional' body to regulate competent

disaster management professionals for the country. I am pleased to share that DMISA is in the process to officiate memorandums of understanding (MOUs) with three institutions namely the NDMC, SALGA as well as UN:ISDR. This will certainly be beneficial to all three these organisations, if they recognise DMISA as the Disaster Management Professional Body and these officials employed in the field complies with the required legal and practical knowledge, skills and experience, to competently implement disaster management in the country.

As usual I convey my acknowledgement and sincere appreciation to all who have contributed toward this edition. Again, also a special word of thanks to our editor and publisher, Lee Raath-Brownie, for her continued support and delivery of world class disaster management publication.



*The recurring drought and its impact has largely dominated the agenda of the NDMC*

- ▶ normal temperatures forecast for the summer with early incidents of El Niño conditions for the summer rainfall areas. This calls for heightened resilience building measures to be implemented.
  - 2. Relief from the severe drought conditions is evident over the central to the south eastern part of the country. Dam levels observed in the April – May – June period, pointed to an improvement in dam levels in the Western Cape and parts of the Northern Cape.
  - 3. Funds allocated in March 2018 for the three critical Cape provinces and additional funds was finalised from the R6 billion provision allocated.
  - 4. A water and sanitation master plan, ‘A call to action’ was endorsed by cabinet on 4 July 2018. The plan stands in five key objectives and enablers and is geared at promoting the water mix for all sectors with an objective to enable growth and development.
  - 5. The integrated interactions led by the IMTT are yielding benefits to mitigate the efforts of drought. The measure of rainfall conditions (SPI) and vegetation conditions (VCI) show improvements particularly in the Western Cape.
  - 6. There are on-going communication and awareness measures rolled-out by various departments and provinces.
  - 7. Integrated environmental interventions within the context of climate change adaptation and water resources management are also in progress. This focuses on clearance of listed invasive species such as Prosopis targeting highly impacted areas of the country.
- Given the above, the lapse of the national state of disaster on 13 June 2018 does not automatically extend to the lapse of the classification of the drought as a national disaster. As such, the national executive, with the support of provincial and local government, remains responsible to manage and coordinate the disaster in terms of existing legislation and contingency

arrangements until an assessment of the magnitude and severity of the disaster indicate that the occurrence should, in terms of Section 23 of the Act, no longer be regarded as a disaster. This effectively ushers in the resilience building phase of the drought.

This entails, amongst others, improving the identification, funding, coordination and management of resilience building projects aimed at increasing resilience and reducing vulnerability to drought. To achieve this, the NDJCC has broadened its focus beyond the continual monitoring of resilience building projects to include focussed projects, funded from the allocations of the respective organs of state, in the Medium Term Expenditure Framework (MTEF) aimed at the identification and implementation of Disaster Risk Reduction projects such as:

- a) Augmenting the water supply to levels where future demand can be met without imposing restrictions
- b) Mainstreaming water conservation and demand management within communities to reduce consumption per capita to that of international norms
- c) Adapting farming practices aimed at mitigating the effects of drought and increasing the resilience of the farming sector
- d) Performing research to find implementable adaptable solutions to increase resilience to drought eg developing alternative resilient crop seeds that are drought tolerant and heat tolerant
- e) Re-evaluating and reinforcing drought policies across government by incorporating the lessons learned during the acute phase of the drought
- f) Addressing backlogs and fast tracking the implementation of bulk water projects
- g) Through deployment of existing local government recovery plans, the Back to Basics (B2B) programme and the Municipal Infrastructure Support Agent (MISA), strengthen the capacity of

municipalities to carry out infrastructure development and maintenance inclusive of operations and maintenance to eliminate water losses.

### Resuscitation of the Heads of Centre’s Forum

The NDMC last year took the decision to resuscitate the Heads of Centre Forum (HoCeF). This forum enables myself to engage on a quarterly basis with the nine provincial heads of centres on operational matters to increase intergovernmental coordination and cooperative governance on matter relating to disaster management. Key aspects such as the alignment and implementation of operational plans, compliance to the Disaster Management Act, 2002 (DMA), reports on response action taken etc contributes to the improvement agenda.

### Vibrant National Disaster Management Advisory Forum

The National Disaster Management Advisory Forum (NDMAF) provides a mechanism for role players to consult one another and coordinate their actions on matters relating to disaster management. The NDMAF has consistently met since its inception in 2002 and through this established a firm basis to, amongst others, mainstream disaster risk reduction and build resilience. The NDMAF is becoming more vibrant through the application of three key principles. The first principle is to request the NDMAF members to systematically ‘report’ on progress made in terms of their programmes and how it implements the DMA. The second principle is for the NDMAF to ‘reflect’ on the reported progress. The third principle is advise the organ of state, where applicable, on measures that may be taken to ‘reinvigorate’ or rejuvenate the efforts of the organ of state in realising the objectives of the DMA. This mantra is finding application in the broader work performed by stakeholders in disaster management and together with the ‘Thuma Mina’ or ‘send me’ Campaign announced by the President in his state of the nation address is proving a powerful combination to advance the disaster risk management agenda.

### Successful SADC workshop on DRR in March

In March the Southern African Development Community (SADC) secretariat hosted a regional disaster risk reduction (DRR) conference to review progress achieved by the SADC Regional DRR programme towards the goal of managing uncertainty, reducing vulnerability and building resilience for SADC member states and communities in view of the global and regional frameworks that guide DRR, resilience and sustainable





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Successful SADC workshop on DRR held in March 2018

► development. The conference attracted a diversity of participants given the nature and relevance of disaster risk reduction including but not limited to SADC member states both at technical and senior officials level, United Nations agencies such as United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), United Nations International Strategy for Disaster Reduction (UNISDR), World Health Organisation (WHO), Food and Agriculture Organisation (FAO), World Food Programme (WFP), United Nations Children's Fund (UNICEF) etc, international cooperating partners and major donors such as Department for International Development (DFID), Skills Development Corporation (SDC), European Union (EU) the World Bank etc, international non-governmental organisations such as Oxfam, International Federation of Red Cross and Red Crescent Societies (IFRC) and Famine Early Warning Systems Network (FEWS NET) etc, academia and private sector institutions. This broad participation provided strengthened awareness of existing and emerging knowledge exchange platforms for DRR and resilience in the region. We recognise the significance and value of financial, technical and academic partnerships demonstrated throughout this conference. During the conference it was recognised that DRR has a number of complexities and that the primary objective should be to make DRR tangible on a local level where the impact and changes within communities can be easily identified.

The conference provided a platform for key international and regional DRR stakeholders to share prominent DRR and resilience initiatives, projects and programmes as part of regional DRR sharing of lessons and experience towards shaping and informing new and upcoming regional resilience programmes aligned to the Sendai Framework for DRR.

The high standard of presentations and panel discussions allowed for diverse views and rich deliberations. Some of the salient issues that were highlighted through the various sessions, include the incorporation of gender-based approaches into all our strategies and programmes, the importance of political buy-in, the need for disaster risk assessments to be forward looking and not only focus on our current risks, on being responsive to early warnings, the critical role of ecosystems and environmental conservation and resilient spatial and urban planning in promoting DRR in the region. The cross-cutting theme on the relationship between DRR and Climate Change Adaptation (CCA) was also highlighted and the need to look at all the dimensions and integration between DRR and CCA across the different sectors and areas, has been reiterated.

I believe we have increased our conceptual understanding of the disaster risk reduction and disaster risk management as opposed to business as usual disaster response and disaster management.

This conference provided an opportunity for enhanced shared learning through stakeholder experiences through DRR and resilience initiatives, projects and programmes. We shared lessons learned and challenges and also identified opportunities that we should embrace. Going forward, we need to recognise the professionalisation of the function through existing mechanisms such as the professional body (DMISA). We also need to continue strengthening linkages on DRR across sectors, look at ongoing platforms of a similar nature for sustainable networking and collaboration amongst stakeholders to drive the DRR agenda in SADC.

### The technical meeting of the BRICS Joint Task Force for Disaster Management

Building peace and prosperity is a fundamental concept in the Brazil, Russia, India, China and South Africa (BRICS) partnership. A key element is cooperation in disaster management, which can also act as a catalyst for deeper partnerships in other areas of cooperation by BRICS member states. To this end, in April 2016, Russia convened the first meeting of the BRICS heads of national agencies responsible for disaster management. The meeting took place in St Petersburg and resulted in the St Petersburg Declaration, which committed to strengthening mutual cooperation in emergency management and to sharing experiences of protecting lives, livelihoods and properties among BRICS member states. The BRICS ministers responsible for disaster management agreed on a Joint Action Plan.

In August 2016, the Government of India hosted the second meeting on disaster management in Udaipur, Rajasthan. The meeting identified areas of collaboration and cooperation by BRICS member states. The Udaipur Declaration reaffirmed the commitments of the St Petersburg Declaration and established a Joint Task Force (JTF) on Disaster Risk Management and a roadmap for implementing the Joint Action Plan approved in 2016. The JTF consist of one representative from each BRICS member state and is chaired in rotation by representatives of each member state.

In June 2018, the first meeting of the JTF on Disaster Risk Management took place in Buffalo City, Eastern Cape, under the theme of 'BRICS taking action on Sendai Commitments'. It recognised that all BRICS member states face similar challenges in their pursuit of the Sendai Framework for Disaster Risk Reduction (SFDRR) goals. The heads of national agencies responsible for disaster management from the Federative Republic of Brazil, the Russian Federation, the Republic of India and the Republic of South Africa attended. The JTF was able to:

- Receive reports on the progress made and challenges faced on the implementation of the Joint Action Plan since its adoption in 2016 under the Udaipur Declaration
- Discuss progress on implementing the roadmap within BRICS member countries
- Adopted a new Joint BRICS Plan and roadmap till 2020
- Shared good practices for implementing the SFDRR
- Developed the draft Buffalo City

Declaration and provide input to the BRICS Leaders' Summit that took place in Johannesburg in July 2018.

### GIS portal enhancing risk profiling and early warning systems

The Early Warnings and Capability Management Systems unit in the NDMC has begun a multiphase approach to establishing an integrated Geographic information system (GIS) portal platform for the NDMC. The project is currently in its third phase, having already completed two previous phases in which the essential architectural design and data model development was completed (Phase1) followed by the phase 2 in 2017 that resulted in the first iterative of actual data and information products being available for the disaster management community. Phase 3 that commenced in the current financial year (2018/19) seeks to further develop new products (drought hazard modelling) and refine existing products developed in the previous cycle. The web portal is anticipated to be an important online repository of information and tools to enable disaster management practitioners to gain access to important spatial data, hazard profile information, community risk assessment tools and current early warnings information such as the latest Fire Danger Index (FDI) for the country. Besides information and data, the web portal also hosts an array of important spatial analysis tools such as self-service mapping measuring instruments and various data manipulation tools.

The completion of a wide user gathering process prior to Phase 1 has ensured that the requirements of provincial disaster management centres (PDMCs) have been incorporated into the long term planning for the web portal platform. During the course of the current financial year, all nine PDMCs will receive a technical session and necessary training in order to use the different products and services. During this training, additional requirements will be noted and incorporated into the future years of the development to ensure that the NDMC keeps abreast of user needs. The directorate is also planning to host various interdepartmental meetings with other GIS units to learn more about the development of web-enabled products and services.

### Impact based early warning system bearing fruits

Severe weather related hazards occur regularly over South Africa (SA) but it is when they impact negatively on humans and their livelihoods, infrastructure or the environment that they can become disastrous. The magnitude of the disaster, though, varies between different places depending on the specific vulnerability of the area. Forecasting

severe weather hazards has improved significantly over the last few decades due to scientific developments in this field. Despite this improvement, accurate and timely warnings of an approaching severe weather hazard does not imply a good response leading to safety of life or prevent major economic disruption.

The Early Warnings and Capability Management Systems Directorate together with the South African Weather Services are currently working on the development of the Impact Based Early Warnings System for South Africa. An Impact-based Early Warning System (EWS) changes the focus of the early warnings from weather prediction to ground based, people-centred risk prediction that is tailored to local conditions. Warning of this nature, takes into account the localised social and structural vulnerability in order to distinguish between less severe and more severe events. Warnings are then customised on these parameters at local level so as to be able to provide an indication of the areas that need immediate intervention due to their increased vulnerability. This is especially relevant in South Africa, due to the fragmented and shared emergency services in different provinces.

The project is currently at an advanced stage with several pilot tests already completed in the different provinces. Both winter and summer rainfall areas were subjected to pilot tests using empirical information to ensure that actual weather related consequences were factored into the testing. The disaster management practitioners and the weather forecasters have been working closely with the different provinces and the various stakeholders to ensure that all elements of severe in their respective areas are considered and planned for in the final product. The South African Weather Services (SAWS) and the National Disaster Management Centre are also

planning to renew their Memorandum of Agreement in 2018, which will further cement these organisations together for a closer working relationship on other thematic areas common to them.

### Launch of the value chain Early Warning Technical Task Team, a breakthrough to manage disaster risk value chain

The NDMC, through the NDJCC, has established an Integrated Drought Risk and Early Warnings Technical Task Team (TTT) to gather, analyse and distribute relevant information products and services necessary for the active monitoring of drought risk and other related hazards from an early warnings and mitigation perspective. Aligned with Section 17 of the DMA, the TTT's purpose is to provide spatial data support, drought risk information early warnings products and services.

This TTT currently enjoys the support of several key departments involved in the current drought management process. These include the Council for Geoscience, the Council for Agricultural Research, The Department of Rural Development and Land Reform and the South African Weather Services (SAWS). Each organisation participates in one of several work streams to supply data and information related to their core mandate and together information is shared over several important themes. The objective of the formation of this task team is to ensure that important information is processed and shared in order to inform important disaster risk related discussions on a national scale.

Disaster management implementation Whilst the monitoring and legislative compliance verifications of disaster management centres are ongoing, the need was identified in January 2018 to do a more comprehensive and independent analysis on the progress made with the





► implementation of the DMA and National Disaster Management Framework (NDMF) by PDMCs. The Disaster Management Secretariat (DMS) of the Southern Africa Development Community (SADC) embarked on a project to develop an inventory of the status, resources, services and implementation of DRM in the region to inform the development of a SADC DRM roadmap. In doing so, a suitable service provider was identified in each SADC member state to produce a comprehensive National Inventory Report (NIR) for the SADC DMS. In South Africa, Resilience Globale was identified and appointed by the SADC DMS to perform the NIR. Closer analysis of the SADC NIR National Inventory Report Project and the envisioned Independent Provincial Disaster Management Compliance Monitoring Project revealed that the two projects had a similar outcome and timeline for completion. It therefore made operational sense to execute the NIR project in partnership with Oxfam to validate the information submitted by the PDMCs to Resilience Globale through in loco visits, whilst also engaging the respective PDMCs on best practices.

The main conclusion derived from the assessment is that many initiatives implemented by sectors in South Africa, are not always associated directly with contributions to DRR. The Department of Environmental Affairs, for example, has numerous projects with a focus on climate change adaptation. When analysing the projects, it became clear that almost all projects contribute to DRR, they just call it something different. The Department Agriculture Forestry and Fisheries and the Department of Rural Development and Land Reform both manage rural development and extension programs, which builds resilience but is internally referred to as 'extension or farmer support'. A big challenge, however, is

the silo approach of departments where each department implements their own strategies and plans without collaboration with other departments.

It also became clear that climate change adaptation may be disproportionately emphasised at the cost of anthropogenic and developmental impacts. As a country, South Africa experiences vulnerabilities due to urbanisation, population growth, population movement, safety and security, crime, poverty and unemployment amongst others. In spite of these, research money and opportunities and projects focus to a large extent on climate change adaptation.

Analysis of the monitoring and legislative compliance data supplied by disaster management centres quarterly have showed that 68 percent of DMCs achieved 90 percent or better against the minimum assessment criteria, whilst 98 percent scored 70 percent or better against the minimum assessment criteria. This indicates that disaster management centres are putting measures in place to address the challenges they may be facing thereby improving their compliance.

Currently, the NDMC has been focussing on closely analysing at least six key aspects reported on in the monitoring and compliance assessment forms submitted quarterly. However, the technology on which the GIS portal platform of the NDMC is based, is providing exciting opportunities for the NDMC, not only in rejuvenating the monitoring and compliance assessment process to focus on all the aspects reported on but, coupled with business intelligence software, will enable the NDMC and PDMCs alike, in the near future, to analyse collected data in a more effective and efficient manner. This will aid the NDMC and PDMCs to focus more attention on not only identifying key aspects that require

support but also to prioritise actions that may yield the best results.

### Disaster management and the incident management system

The NDMC is mandated to ensure the development and institutionalisation of incident management systems (ICS) in order to ensure effective and efficient response to all major occurrences and disasters in the country. The United States of America Forest Services (USFS) has been involved in ICS capacity building in South Africa since 2003. During 5 to 9 March 2018, the USFS presented ICS 100-300 courses to identified key role players in South Africa. A total of 35 officials from the NDMC, provincial disaster management centres, key national sector departments (involved in disaster response) and some municipalities benefited from this important training. The NDMC, building on the work done by the SA ICS Work Group, will be initiating a process to institutionalise a multi-hazard National Incident Management Systems in the country. To this end, a national multi-sectoral committee has been established to drive this process and a clear programme of action with key milestones on how multi-hazard ICS will be institutionalised in South Africa has been developed.

### DCoG Mandate Bosberaad afforded the NDMC to set the tone for its further work on the institutional configuration of the disaster management function in South Africa

The dates 15 to 16 August 2018 saw the staging of the first ever mandate Bosberaad to reflect on its Constitutional mandate, vision, mission and strategic roadmap to give effects to its vision. This platform also provided an opportunity to for the NDMC to adopt a founding statement towards further work on its configuration. This will be taken forward through appropriate processes under the leadership of the Minister.

### Preparations for the National Disaster Management Indaba 2019

A task team on the preparation for the 2019 Indaba has been constituted and will commence with meetings to execute its activities under the leadership of the Head of the National Disaster Management Centre supported by the National Disaster Management Advisory Forum.

Yours sincerely

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

# A CONSEQUENCE MANAGEMENT APPROACH TO DISASTER MANAGEMENT: PREPAREDNESS PLANNING PART 3

By Dr Johan Minnie and Schalk Carstens

In this series of articles, a consequence management approach to the reactive elements of disaster management is discussed. The basic departure point of the authors is that consequences and the responsibilities for dealing with those consequences form a logical and useful point of departure and organising framework for dealing with disaster preparedness and response. The following figure illustrates the concept, indicating that hazards and the progression of vulnerability combine to create hazard impacts, which in turn, have both predictable and unpredictable consequences. The defined responsibilities of different role-players link them to the observable and known consequences of the impact and require action from them. The fact that responsibility may be denied or contested or not clearly assigned, will remain a complicating factor but is also a fact of life in any management situation that needs continuous attention.

The first article in this series stated the case for the consequence management approach, which is being unpacked in the series of articles. The second article in the series explored the concept of preparedness, which is key to being ready to manage consequences.

In this article the authors will discuss preparedness planning and the hierarchy of preparedness plans that enable jurisdictions to conduct effective consequence management.

As stated in the previous article in this series, which discussed the concept of preparedness, preparedness or contingency planning includes anticipating and planning for a specific occurrence but not yet implementing the plan.

The Disaster Management Act, 2002 (Act 57 of 2002), as amended, defines emergency preparedness as:

- a) A state of readiness which enables organs of state and other institutions involved in disaster management, the private sector, communities and individuals to mobilise, organise and provide relief measures to deal with an impending or current disaster or the effects of a disaster and
- b) The knowledge and capacities developed by governments, professional response and recovery organisations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current hazard events or conditions.



Figure 1: Disaster Reaction Model (Carstens and Minnie, 2014)

This definition denotes two elements of preparedness; firstly an enabling state of readiness and secondly effective knowledge and capacity. It follows that if you are planning for preparedness, you will be planning to establish a minimum state of readiness and also to establish sufficient levels of knowledge and capacity. The 'action' or response referenced as the outcome of Figure 1 will thus include implementing the provisions made as part of establishing a minimum state of readiness, as well as deploying the knowledge and skills established through preparedness planning.

### An enabling state of readiness

Preparedness planning in a community for an appropriate state of readiness will reflect the extent to which that community is exposed to disaster and will be ready to rapidly deploy resources that covers at least short-term emergency planning, hazard warning and temporary evacuation plus the availability of emergency supplies. An enabling state of readiness will pre-identify actions to be undertaken in the first golden hours or days following the disaster impact. Preparedness planning also considers the process and schedule for identifying and meeting resource and training needs; the process and schedule for developing, conducting and evaluating exercises and correcting identified deficiencies; arrangements for procuring or obtaining required response management resources and plans for facilities and equipment that can withstand the effects of hazards that the jurisdiction is more likely to face.

Preparedness planning should consider corrective actions designed to implement adjustments to resources and/or plans and procedures that are based on lessons

learnt from actual incidents or from training and exercises. Preparedness planning should also consider the post-incident transition from pure response to relief, which addresses actions beyond rapid damage assessment and those necessary to provide immediate life support for victims.

### Effective knowledge and capacity

Effective knowledge and capacity for preparedness in a specific location or jurisdiction will also need to be tailored to the context. Emergency response to a sea rescue from a burning oil rig will require different knowledge and capacity than responding to the consequences of drought and food insecurity in an arid region. The preparedness planning activity will build the knowledge required for effective response, as well as the necessary capacity in terms of skills, resources, equipment and facilities. Plans will describe how personnel, equipment and other governmental and nongovernmental resources will be used to support response. Such plans represent the operational core of preparedness and provide mechanisms for setting priorities, integrating multiple entities and functions, establishing collaborative relationships and ensuring that communications and other systems effectively support the complete spectrum of response management activities. The following hierarchy of preparedness plans and procedures have been described in systems such as the United States Federal Emergency Management Agency National Incident Management System (US FEMA NIMS) and others and have also been observed in preparedness planning in various jurisdictions in South Africa.

### Jurisdiction preparedness plan (PP)

Each jurisdiction develops a preparedness plan that defines the scope of generic or all-hazard preparedness and incident

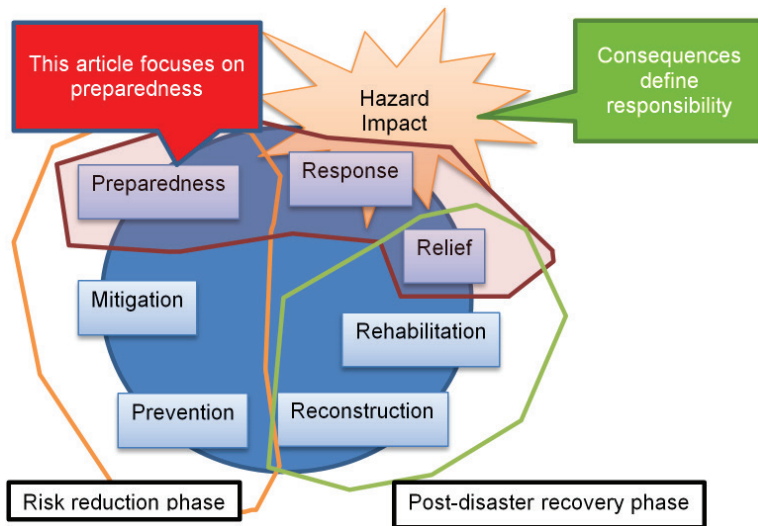


Figure 2: A representation of the much used (and admittedly much criticised) Disaster Management Continuum, indicating the focus of this article

management activities necessary for that jurisdiction. Jurisdictions could be spatial or functional. Examples of jurisdictions include departments, organs of state, municipalities, districts, cities, metros, provinces and countries and also entities with sectoral responsibilities. The exact name of this plan is less important than its content; sometimes such plans are called disaster response plans or just emergency plans or sometimes the preparedness plan is the response element of another higher-level plan that caters for both risk reduction and response, such as a jurisdiction’s overall disaster management plan.

The PP should describe organisational structures, roles and responsibilities, policies and protocols for providing emergency support. The PP facilitates response and short-term recovery activities, which set a stage for successful long-term recovery. It should drive decisions on long-term prevention and mitigation efforts or risk-based preparedness measures directed at specific hazards. A PP should be flexible enough for use in all emergencies and therefore all-hazard emergency preparedness and response should form the backbone of a PP, as it indicates how multiple services in a jurisdiction will coordinate their response to major incidents and disasters. A complete PP should describe the purpose of the plan, situation and assumptions, concept of operations, organisation and assignment of responsibilities, administration and logistics, plan development and maintenance and authorities and references. It should also contain response activity descriptions or references to such descriptions and their constituent action steps and procedures, hazard-specific appendices or references to hazard-specific plans and a glossary. PPs should pre-designate jurisdictional and/or functional area representatives for joint response management structures

to facilitate responsive and collaborative response management. PPs should include public awareness, -education and -communications plans and protocols. PPs may also include facility-specific appendices or references that describe emergency response arrangements for specific critical and lifeline facilities or installations as well as installations, which may generate significant off-site impact if they experience emergencies.

As mentioned above, organisations or group/clusters of organisations with responsibilities in terms of the PP should develop procedures that translate the responsibilities of that organisation into specific action-oriented checklists for use during incident management operations, including how the organisation will accomplish its assigned tasks. Some organisations may choose to call their collection of procedures a plan but once again, names are less important than content. Procedures are documented and implemented with checklists; resource listings; maps, charts and other pertinent data; mechanisms for notifying staff; processes for obtaining and using

equipment, supplies and vehicles; methods of obtaining mutual aid; mechanisms for reporting information to organisational command structures or work centres and joint response management structures and communications operating instructions, including connectivity with private-sector and nongovernmental organisations. The development of procedures is required in accordance with legislation for certain risk-based hazard-specific programmes as well as for specific individual facilities and installations in terms of occupational health and safety legislation.

**Levels of procedural documents**

Four levels of procedural documents have been identified in incident management and emergency response planning literature:

- Overview: a brief concept summary of an incident-related function, team or capability
- Standard operating procedure (SOP) or operations manual: a complete reference document that details the procedure for performing a single function or a number of interdependent functions
- Field operations guide (FOG) or handbook: a durable pocket or desk guide that contains essential information required to perform specific assignments or functions and
- Job aid: a checklist or other aid that is useful in performing or training for a job.

In summary, preparedness planning will establish an enabling state of readiness and effective knowledge and capacity to rapidly respond to any emergency that may be expected by a jurisdiction, whether that jurisdiction is spatial or functional. Preparedness planning reflects responsibility and provides the space for line functions to express their role and functions in a disaster.

This concludes this third article in this series of articles about consequence management. The next article will focus on response management. 🌐

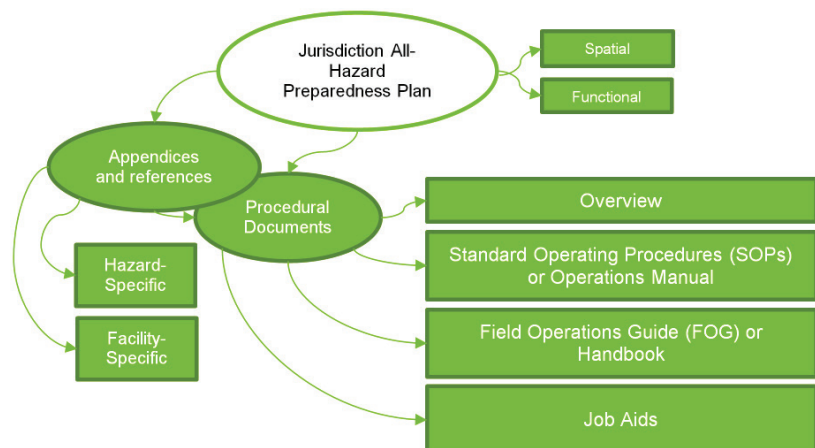


Figure 3: A hierarchy of preparedness plans

# THE CASE FOR A DISASTER MANAGEMENT AND PUBLIC SAFETY AUTHORITY IN SOUTH AFRICA

By Colin Deiner, chief director, disaster management and fire brigade services, Western Cape Government



Ever since the promulgation of the Disaster Management Act in 2005, the optimum placement of the disaster management function has been a topic of (often heated) discussion in the South African disaster management community. No piece of legislation has, however, proved its value or shown its shortcomings until it has been tested in practice. During recent years the Disaster Management Act has been implemented to various degrees during the 2008 xenophobic violence that effected large parts of the country, the 2010 FIFA World Cup, various large wildfire incidents and widespread incidents of drought which culminated in the first national disaster declaration in 2018.

A number of interesting challenges have emerged from these disasters, which has once again placed the spotlight on the placement of the disaster management function. The popular opinion among disaster management practitioners is that the function should be placed at the highest level of local, provincial and national government ie in the offices of the executive mayor, premier and president. This is in line with international best practice and certainly from an authoritative point of view, places the disaster management unit in the best position to execute its mandate.

Of course, there is also an opposing school of thought, which believes

that disaster management is correctly placed within the national Department of Cooperative Governance and Traditional Affairs (CoGTA) and the provincial CoGTAs (or Departments of Local Government [DLG]). The main contention from this grouping is that all disasters start within a municipal jurisdiction and therefore it is correct that the provincial and national department charged with overseeing municipalities, is the ideal home for disaster management. This contention unfortunately does not take into account that local government is an autonomous sphere of government and does not fall under the authority of provincial or national CoGTAs. It begs the question, "Why is it then important that the function should be placed where it currently is?"

Furthermore, at local and district government level the function of disaster management normally resides within the public safety or emergency services directorates. Considering that these functions (in that sphere) coexist with emergency medical services (a health function), metro police (a safety and security function), municipal security (go figure), emergency call centres (a whole range of functions) and fire services, you get the idea that you are, in actual fact, disintegrating disaster management in order to integrate it into the provincial CoGTA system. An executive director at municipal level will then find himself/herself having to

report and communicate to a number of provincial and national office bearers just to get the job done. It may be bureaucracy heaven but it doesn't work on the ground. Where it matters!

Unfortunately, we are in the second decade of the Act being in power and are still arguing this issue. So, what to do.

Although there are a myriad of arguments for and against the placement of the function, I would like to focus on a purely administrative arrangement for the effective placement of the disaster management function as well as its auxiliary functions.

The many challenges experienced by disaster management practitioners during the recent drought, wildfires and storms mostly relate to the inability of standard 'run-of-the-mill' governmental structures to support the critical activities necessary to respond to the effects of the disaster. Few national and provincial line departments have a 24-hour alert system where officials are placed on standby and would be ready to respond to any emergencies after hours. There are very few regulations enabling supply chain management directorates to make rapid decisions when emergency procurement has to be done. Although provision exists for emergency procurement, the lines are often blurred and the controlling authority becomes seriously risk



*Fire and rescue services dealt with various large wildfire incidents*

► averse when the often massive costs of dealing with potential disasters are considered. In many cases, the relevant heads of emergency medical services, fire fighting and rescue services and disaster management centres have to report to department (or section) heads that have no experience in this field and are seriously averse to the possible fiduciary risk to making any financial decisions without the necessary prior due process having been undertaken.

Here are a few examples: 1) a major forest fire breaks out over the Christmas weekend that threatens to destroy thousands of hectares of farmland and possibly the lives of several people and animals. The relevant provincial department under which the disaster management centre resides has 'closed' for the Christmas break. Sure, an acting head of department has been appointed for this period but now you are asking this person to activate resources amounting to millions. The question is: Will this person be prepared to appreciate the risk and make the necessary decisions to mitigate the incident if he/she is not experienced enough to understand the gravity of the decisions that need to be taken. Sure, this is a compliant government and plans are in place but the acting person generally never deals with disaster management and you are now asking them to approve expenditure that is almost as big as many departments' operating budget for the year. 2) An estuary located within a coastal municipality gets flooded due to heavy rains and it becomes critical that it will have to be breached in order to prevent the destruction of the houses and

settlements adjacent to it. A large bill will be run up contracting earthmoving and salvage equipment to carry out this task. Will the affected municipal manager be prepared to make the decision? Generally these activities are not in the municipal or provincial budgets and by the time everyone has finished arguing, it might be too late. Granted, we should here again have contingency plans for such events that spell out exactly who is responsible for what and who will bear the relevant costs. This, however, is the real world and I can say with a fair degree of certainty that, although the disaster management centre might have plans, you will be hard pressed to find a municipality or province that has the necessary contingency budget for such eventualities.

#### Emergency services

I believe we all agree that emergency services are a prime part of most of the disaster incidents that we respond to such as large fires, earthquakes, floods, epidemics, civil unrest, hazardous chemicals incidents etc. As I am writing this, we have seen a week where large scale flooding has struck certain parts of the country, a fire ripped through a waterfront shopping and entertainment complex destroying the entire development, twelve units in a residential estate were totally destroyed by fire, 200 000 used tyres were set alight near a large city causing unspeakable environmental damage and numerous people had to be extricated from vehicle wrecks following accidents.

We read and hear daily of the massive challenges faced by municipalities in the country. The task of these authorities is massive. Ageing water,

sewerage and electricity infrastructure. Increasing unemployment and crime. The increasing challenge of solid waste removal. Maintenance of roads and bridges that, due to their age require increased reparations. Housing and human settlement development backlogs that are, due to their emotive nature, leading to heightened tensions throughout the country and very often reach boiling point that leads to civil unrest and widespread damage to council property. Lack of sufficient public transport solutions for commuters for whom this is the only way to get to their places of work. We need to then ask, "What are the chances that a municipality confronted with all these will maintain an effective emergency service?" Fire and rescue services, other than traffic and metro police departments, are not a constant source of income for a municipal government. They might charge for responding to an incident but these costs rarely cover the actual cost of maintaining their vehicles and equipment and employing sufficient staff to effectively respond to all the risks in their areas of jurisdiction. What you then get in many cases is a 'token' fire service with minimal staff and equipment who are capable of dealing with minor incidents but will be hard pressed to manage even a medium size structural fire or large transportation incident. Not to mention a toxic, corrosive or radioactive hazardous materials incident. The United Nations have developed a system of classification of dangerous goods, which is the international standard used by such groups as the International Civil Aviation Organisation (ICAO) and many others. These comprise the following:

- Explosives
- Gases
- Flammable liquids
- Flammable solids
- Oxidizing substances
- Toxic and infectious substances
- Radioactive material
- Corrosives
- Commonly transported miscellaneous dangerous goods (such as ammonium nitrate fertilisers, polychlorinated biphenyls, dibromodifluoromethane, benzaldehyde and battery powered equipment).

All of the above products (when involved in a major incident) have the potential to cause widespread destruction and loss of life. Our emergency services, Ladies and Gentlemen, are the first line of defence against such catastrophes. We neglect them at our peril.



It is therefore an undisputed fact that with the exception of the larger cities, it is virtually impossible for most municipal governments to maintain an effective fire and rescue service. There are a few gems out there that will no doubt prove me wrong and I tip my hat to them. Generally though, the above statement is a fact that we can't ignore.

### Emergency health services

The delivery of emergency medical services is in terms of the Constitution of South Africa a function of provincial Government. With the exception of one province, this function is performed by provincial health departments. As with fire and rescue services, we frequently learn that most health departments are constantly burdened by a lack of hospitals, trained staff and equipment. It is also a fact that most healthcare facilities are overstressed to breaking point with the numbers of patients they need to care for. As above, we must ask the question, "With all these challenges, is it possible to provide an effective emergency medical service to the public?"

### Incident command

Incident command systems (ICS) have in recent years become the prime tool for the management of large scale incidents. It does, however, require that all responding agencies work under a single command system that bears overall responsibility for the management of the incident. Unfortunately, the situation often arises where the responding agencies rather comply with their own command system and work outside of the larger command structure. This creates large scale confusion when objectives of the various agencies are not aligned and the designated incident commander does not have full control of all the resources. There should be only one system and one set of objectives.

### The case for a 'Disaster Management and Emergency Services Authority'

With the intention of government to re-evaluate the enormous civil service wage bill, it is probably ludicrous to suggest the establishment of yet another government department and, precisely for that reason, I can't see this getting off the ground. However, I believe that it could actually lead to a more cost effective and ergonomic system that could save the country billions and also ensure an effective system of emergency service provision.

My proposal is that all the services tasked with the provision of disaster



*The delivery of emergency medical services is a function of provincial Government*

management and emergency services be placed in one single department, where all aspects of these fields can be covered in a homogeneous environment not distracted by other disciplines and areas of service delivery. The disaster risk profile of a specific area will be the main driver in determining the structure of the department in pre-determined regions and all staff, equipment and other budget allocations will be informed by this.

Although centrally coordinated, the risk can then be determined through geographical rather than political boundaries. This will negate the acquisition of scarce resources by two neighbouring municipalities and quicker response to emergencies through a more scientific placement of resources.

Functions such as control centres, call taking and dispatch, supply chain management and risk assessments can then be done centrally without the continuous duplication we are currently seeing.

The overall management will then also be done by a career professional who specialises in disaster management (as required by the national framework) and we are no longer placed in a situation where the placement of the function is and who is ultimately responsible for it is in question.

It will have the further advantage that all responding agencies, with the exception of the police, will follow the same command system as they will all 'work for the same boss'.

You might say that this is all well-and-good and sufficiently addresses the emergency services but what

advantages does it have for disaster management? The main advantage as I see it is that we will finally be able to give meaning to risk assessments and risk management as such a department will be able to within its structure establish a risk management directorate, which will have the authority to engage any line departments and other risk owners from a stronger position. The London Fire Brigade has a risk and planning division in the headquarters in Euston Square, which employs more than 50 experienced professionals who deal with the entire risk profile of the city. It would carry much more weight if an instruction to a line department regarding its risk mitigation and disaster prevention responsibilities came from a senior authority than a directorate (or chief directorate) within a smaller line department.

### Conclusion

In this article I have merely tried to suggest a solution for many of the challenges facing disaster managers and public safety practitioners in South Africa. I only ask that we reflect on these thoughts and consider the benefits it may have for our country. A group of engineers and oceanographic specialists in the Western Cape recently did a study of the viability of towing an iceberg from the Antarctic to Cape Town to relieve the devastating drought in the province. Preliminary assessments indicated that it was indeed possible and viable but that a lot more research needed to be done. I believe that the establishment of an authority of this nature is very much the same: possible and viable but a lot more work needs to be done. 🇷🇺

# DYNAMIC DISASTER RISK MANAGEMENT



The Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) is the first major agreement of the post-2015 development agenda, with the aim of substantially reducing disaster risk and loss in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.

In response to the SFDRR, DMS NPC, in collaboration with the Unified Communications platform (UNITI), have resolved to embark on a unique approach that not only meets the objectives set out by the SFDRR but ensures the development of integrated, dynamic and community-based solutions that serve to enhance community resilience. The use of UNITI in the development, implementation and monitoring of disaster risk solutions, sets this approach apart from others in the field.

## Strengthening disaster risk governance to manage disaster risk

Disaster risk governance at the national, regional and global levels is essential for prevention, mitigation, preparedness, response, recovery and rehabilitation. This is achieved by fostering fundamental collaborations and partnerships.

DMS NPC facilitates integrated institutional arrangements for disaster risk management (DRM). Safe and resilient communities require optimal use of resources, as well as active coordination and participation of all relevant stakeholders in the community. Determining these optimum institutional structures is key to successfully enhancing community resilience.

UNITI supports this with the following processes and mechanisms:

- Communication between multiple individuals and groups from all organs of state as well as the communities

- Facilitation of memoranda of understanding between various role-players by making them readily accessible in a fully integrated document management system and
- Establishment of information and knowledge platforms for joint and active participation of all DRM stakeholders, such as advisory forums, technical advisory committees and technical task teams.

## Understanding disaster risk management

Effective DRM is based on an understanding of disaster risk as a multi-dimensional concept, which includes conditions of vulnerability, capacity and hazard. Such knowledge can be used for disaster risk profiling and planning, for prevention, mitigation, preparedness and response to emerging risks.

DMS NPC facilitates the profiling of dynamic community-based needs and risks, including gathering, analysis and evaluation of information regarding hazards, vulnerability and capacity, in order to determine priority risks.

UNITI supports this approach as well as the maintenance of a dynamic risk profile by:

- Assisting, through a customisable dashboard, with the display and analysis of hazard types, conditions of vulnerability and critical facilities and
- Supporting the visual and spatial distribution of the components of risk using maps, displaying high risk areas, hot spots, etc.

## Investing in disaster risk reduction for resilience

Public and private investment in disaster risk prevention and reduction, through structural and non-structural measures, is essential to enhance the economic, social, health and cultural resilience

of persons, communities, countries, including the safeguarding of their assets, as well as the environment. Measures are determined by the priority risks identified by and in collaboration with, communities and other relevant stakeholders.

DMS NPC facilitates a participative bottom up early warning approach, complementing top down early warning processes where they exist. The approach makes use of the internationally recognised people-centred early warning system (EWS) framework and emphasises the development of multi-hazard EWS.

UNITI has partnered with the Advanced Fire Information System (AFIS) of the Council for Scientific and Industrial Research (CSIR), which is a mature operational wildfire information system focussed on the prediction, detection, monitoring and assessment of wildfires. The system utilises a portfolio of sensors for early detection of fire events as well as for mapping of burn scars at 20m/30m resolution every five days. In addition to the detection and mapping of fire events, the system also provides users with five-day high resolution weather forecasts as well as fire danger forecasts based on both the Lowveld as well as the Canadian Fire Weather Index.

## Enhancing disaster preparedness for effective response and to 'build back better' in recovery, rehabilitation and reconstruction

With the increasing effects of climate change, political activism and the like, there is a growing need to strengthen disaster preparedness to ensure capacities are in place for effective response and recovery at all levels. The post disaster recovery, rehabilitation and reconstruction phase is an ideal opportunity to build back better, including, amongst others, the integration of disaster risk reduction concepts in development plans. ▶

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# DROUGHT INDICATORS AND DROUGHT CLASSIFICATION, LONG OVERDUE IN A DROUGHT PRONE SOUTH AFRICA

By Dr Andries Jordaan (PhD) PrSciNat, PrDM, MMM, DWD, Director, Disaster Management Training and Education Centre for Africa (UFS DiMTEC), Faculty of Natural and Agricultural Sciences, University of the Free State

**D**rought classification and the application of drought indicators are essential elements in drought management and drought monitoring. Drought classification is based on certain indicator thresholds and provides a framework for drought management. The drought classification, indicator selection and indicator thresholds discussed in this article are the result of research completed by Jordaan and others as well as contributions from the expert committee on drought indicators, a sub-committee tasked by the National Drought Task Team to develop and finalize the drought categories and indicators for South Africa.

Drought is categorised into five categories, namely (i) D0 – Dry, (ii) D1 – Moderately dry, (iii) D2 – Severe drought, (iv) D3 – Extreme drought, and (v) D4 – Exceptional drought. Indicators are classified as primary indicators, which are easy to monitor on a daily basis and secondary indicators, which focus more on drought impacts. Primary indicators are categorised as meteorological indicators, agricultural indicators, which are remotely sensed and hydrological indicators. This article provides an introduction to potential indicators used for drought classification.

When to declare a drought a disaster remains one of the most debated issues in the field of disaster management. The 2015/2016 drought in South Africa is another example that illustrates the need for quantifiable indicators for drought classification and declaration. Five out of the nine provinces in South Africa declared the drought as provincial disasters, yet it was never declared a national disaster in spite of the fact that the Disaster Management Act (Act 57 of 2002 and amended Act 16 of 2015) stipulates that a national disaster can be declared once more than one province is affected by drought or a disaster.

The declaration of drought disasters and the way in which government responded to droughts is amongst the most

important contributors to increased resiliency if it is handled correctly but the lack of efficient relief causes increased vulnerability. Both the commercial and communal farming sectors are highly susceptible to the negative impacts of drought and so is the economy at large. This article highlights the importance for drought indicators that are quantifiable, easy to measure and understand, transparent and all-inclusive, implying that one should be able to measure the hazard as well as the impact of a drought.

Indicators for drought classification and disaster declaration Drought disaster declaration is linked to drought classification and previous research done by Jordaan (2011) and Jordaan et al (2017), highlighted the difference in disaster thresholds for the different agricultural sectors. Communal farmers, for example, experienced normal dry periods as disaster droughts because of land degradation and overgrazing, the lack of alternative resources, poor management and numerous other reasons. The threshold for a disaster drought in the case of communal farmers is therefore not the same as thresholds for the commercial farming sector. Different agricultural systems also require different thresholds and different indicators. Dry periods during the months September to February can have a disastrous effect on the maize industry while the livestock sector might experience the same dry period as a mild drought; therefore the need for different thresholds and different indices for different systems. A 'one-fit-all' indicator and threshold selection is not possible.

## Drought classification

The different types of drought are linked to the different indicators, with the primary indicators as follows:

- Meteorological drought: Meteorological indicators such as percentage of rainfall and the Standard Precipitation Index (SPI) or the Standard Precipitation Evaporation Index (SPEI).
- Agricultural drought: Remote sensing satellite indices such as the Vegetation Condition Index (VCI) and the percentage of Average Seasonal Greenness (PASG). Measurement ▶

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Categ	Description	Potential impacts
D0	Dry	Going into drought: <ul style="list-style-type: none"> <li>• Short term dryness                             <ul style="list-style-type: none"> <li>◦ Limiting planting conditions</li> <li>◦ Limiting growth of crops or pastures</li> <li>◦ Smaller farm dam levels lower than usual</li> <li>◦ Some springs stop flowing</li> </ul> </li> </ul> Coming out of drought: <ul style="list-style-type: none"> <li>• Some lingering water deficits</li> <li>• Pastures and crops not fully recovered</li> <li>• “Green drought” with young vegetation growth on pastures</li> </ul>
D1	Moderate drought	<ul style="list-style-type: none"> <li>• Some damage to crops</li> <li>• Streams, reservoirs or wells low</li> <li>• Some water shortages developing or imminent</li> <li>• Voluntary water restrictions requested</li> <li>• Soil moisture deficit for planting crops</li> <li>• Grazing conditions start deteriorating</li> <li>• Animals start showing feeding stress</li> </ul>
D2	Severe drought	<ul style="list-style-type: none"> <li>• Crop and pasture losses likely</li> <li>• Water shortages are common</li> <li>• Water restrictions imposed</li> <li>• Grazing conditions deteriorated</li> <li>• Animals show serious feeding stress</li> <li>• Groundwater levels going down at selected places</li> <li>• Disaster drought declaration imminent and required for certain sections of society</li> </ul>
D3	Extreme drought	<ul style="list-style-type: none"> <li>• Major crop and pasture losses</li> <li>• Severe shortages in natural grazing</li> <li>• Some sales of productive assets</li> <li>• Widespread water shortages</li> <li>• Groundwater levels very low</li> <li>• Negative impact on regional economy</li> <li>• Disaster drought declaration required</li> <li>• Not enough feed and fodder for animals</li> <li>• Animals lose condition</li> </ul>
D4	Exceptional drought	<ul style="list-style-type: none"> <li>• Exceptional and widespread crop and pasture losses</li> <li>• Major sales of productive assets</li> <li>• Forced liquidation of farming enterprises</li> <li>• Shortages of water in reservoirs, streams and wells creating water emergencies</li> <li>• Boreholes dried up with extremely low groundwater levels</li> <li>• Rivers dried up</li> <li>• Potential food insecurity</li> <li>• Widespread economic impact - Impact on national economy</li> <li>• Disaster drought declaration required with extreme response and recovery actions</li> </ul>

Table 1: Drought categories

- ▶ of agricultural droughts is also done through secondary indicators such as actual veld condition, grazing reserves, drinking water and animal and crop condition.
- Hydrological drought: Actual measurements of dam levels, streamflow and groundwater levels are used to measure hydrological drought.
- Socio-economic drought is only measureable through secondary indicators such as impacts on individual farmers and the regional and larger economy.

For the purpose of drought classification the proposed classification is aligned with the United States and Mexico classifications. Together with Australia, these are currently amongst the countries with formal drought plans. The different drought categories are:

- D0: Dry
- D1: Moderate drought
- D2: Severe drought
- D3: Extreme drought
- D4: Exceptional drought

Drought monitoring and drought assessment require the integration of all information such as indices and impact indicators in a comprehensive framework. Drought monitoring through indices alone, however, does not constitute drought risk since the impact (vulnerability) of different sections (economic, social, environment) needs to be linked to the ‘hazard’ or the lack of sufficient amounts of water, which are indicated through the different indices (Wilhite et al, 1997; Du Pisani et al, 1998; Wilhite, 2000; Wisner et al, 2004, Jordaan, 2011). The data used for the risk assessment should be statistically coherent and quantifiable, validated by feedback from users and functional for use as timely early warning and drought disaster declaration information.

The description of the drought categories with potential impacts is discussed in Table 1.

The United States Drought Monitor is probably the most developed drought monitor system in the world and they made the following statement, “This is what makes the US Drought

Monitor unique. It is not a model. The USDM relies on experts to synthesize the best available data from multiple sources and work with local observers to localise the information as much as possible. Numeric inputs are many: the Palmer Drought Severity Index, the Standardised Precipitation Index and other climatological inputs; the Keech-Byram Drought Index for fire, satellite-based assessments of vegetation health and various indicators of soil moisture from data assimilation systems and other models and hydrologic data, particularly in the West, such as the Surface Water Supply Index and snowpack” (USNDMC, 2016).

Drought is a slow onset disaster with long term consequences. The first rain during a D3 and D4 drought might end the meteorological drought but not the agricultural drought and especially not the socio-economic drought. The end of the hydrological drought also only occurs during the fill-up of the reservoirs and increased streamflow. The de-classification of droughts therefore needs to consider the lag effect of a particular drought. For example, grass can take two months to recover after the first rains and the socio-economic impact of drought are normally felt two years after the drought and, in the case of D3 and D4 drought, the impact can still be seen on average five years after the drought. Livestock farmers reported that in the case of D4 drought most farmers do not recover fully, especially when they have to sell breeding stock and when they lack the necessary resilience to withstand such a drought. In such cases government safety nets must be activated to support the agricultural sector. The 1992/93 drought is such an example where the South African Government supported the agricultural sector and agricultural cooperatives on a large scale.

The different drought categories and durations of different types of drought are illustrated in Figure 1.

Disaster drought declaration is imminent during drought phase D2. During D2 the communal agricultural sector might already require external assistance. Disaster drought declaration is required for phases D3 and D4. Drought phase D4 might require extreme response and recovery measures in order to secure long term sustainability of the agricultural sector. Towns and some communities might be without drinking water and government at all levels should impose extreme water restriction measures and initiate activities to supply daily water requirements.

Important for the determination of different drought categories are the indicators and thresholds to measure the different droughts.

**Drought indicators**

Drought indicators are classified as primary and secondary drought indicators. The primary indicators are those indicators that are easy to monitor using meteorological data, satellite images and gauging stations, while the secondary indicators require actual field visits to the affected area. Not one single drought index fitted all needs to determine the different types of droughts. The finalisation of the drought indicators discussed in this article followed a process of consultative meetings between Agri SA, the Department of Water and Sanitation (DWAS) and the Agricultural Research Council (ARC) under the chairmanship of the Department of Agriculture, Forestry and Fisheries (DAFF). All parties involved in the development of the drought indicator document agreed that it was work in progress and the guidelines and indicators for drought declaration would be adjusted as we obtain more insight into especially the different thresholds. One of the major gaps identified are the thresholds for different types of drought and when a dry

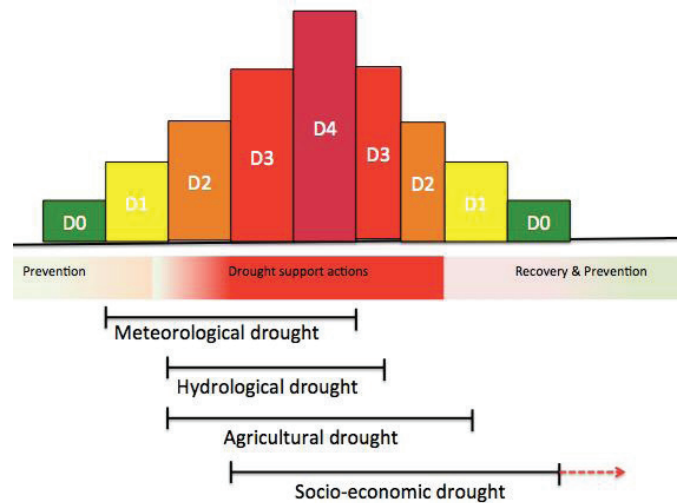


Figure 1: Illustration of drought classifications

period becomes a drought, since these thresholds are not the same for all sectors due to the inherent differences in vulnerability and/or resiliency to drought.

For the purpose of drought management in South Africa, the drought hazard indicators are classified as primary and secondary indicators. The primary indicators are mostly linked to meteorological data, hydrological data through gauging and remote sensing. These indicators are quantitative and it is possible to monitor drought hazard in real time. The idea with primary indicators is that continuous monitoring will take place and once certain thresholds are reached, drought

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## Drought indicators and drought classification

- classification can take place based on the thresholds and evaluation of secondary indicators are then activated. The secondary indicators serve to 'ground-truth' the impact of the dry period.

### Primary drought hazard indicators

Meteorologists and other specialists have developed numerous indicators for drought, yet none of these satisfied the need under all conditions. Examples of these, in no specific order, are (i) crop moisture index, CMI (ii) mean monthly rainfall deficit, (iii) percent of normal precipitation, (iv) Palmer Drought Severity Index, PDI (Palmer 1968; Alley, 1984; Karl and Knight, 1985), (v) PUTU suite of plant models

(Fouche et al, 1985; Fouche, 1992), (vi) Rainfall Anomaly Index (Van Rooy, 1966), (vii) relative drought resistance method (Roux, 1993), (viii) rainfall deciles method (Erasmus, 1991), (ix) Roux expert system (Roux, 1991), (x) surface water supply index, SWSI (Shafer and Dezman, 1982), (xi) reclamation drought index, (xii) deciles (Gibbs and Mather, 1967), (xiii) Standard Precipitation Index, SPI (McKee et al, 1993), (xiv) Standard Precipitation Evapotranspiration Index, SPEI (Vicente-Serrano et al, 2010), (xv) ZA shrubland model (Venter, 1992), (xvi) Zucchini-Adamson models (Zucchini et al, 1991) and others that are not relevant in the context of this study (for example, Du Pisanie et al, 1998; Wilhite, 2000; WMO, 2006; Vasilaides and Loukas, 2009).

**Table 2: Most common meteorological indicators**

Index	Input parameters	Additional information
Aridity Anomaly Index	P, T, PET, ET	
Deciles	P	Easy to calculate
Keetch-Byram Drought INDEX (KBDI)	P, T	Specific climate in an area is basis for calculation.
Percent of Normal Precipitation	P	Simple calculations
Standard Precipitation Index (SPI)	P	Recommended by WMO for use internationally. Possible to compare different climate zones.
Standard Precipitation Evaporation Index (SPEI)	P, PET	Same as SPI, but evaporation also included. If all data is available a more accurate indicator than SPI>
Z-score	P	Simple to calculate, but shorter time scale with large difference in mean and median might not be accurate.
Aridity Index	P, T	Can also be used for climate classification
China Z Index	P	Easier to calculate than the SPI and provides similar results
Crop Moisture Index	P, T	Weekly temp and precipitation data are required
Drought Reconnaissance Index (DRI)	P, T	Monthly temp and precipitation data are required. Identify the onset and end of water deficit periods.
Effective Drought Index (EDI)	P	Requires daily precipitation data
NOAA Drought Index	P	Best used for application in agriculture
Palmer Drought Severity Index (PDMI)	P, T, AWC	Complex calculations and require serially complete data.
Rainfall Anomaly Index	P	Require serially complete data
Standardised Anomaly Index	P	Point data used to calculate regional conditions
Reclamation Drought Index (RDI)	P, T, S, RD, SF	Similar to surface water supply index, but also requires temperature data
Crop Specific Drought Index (CSDI)	P, T, S, RD, SF	Quality data of many variables needed, making it challenging to use.
Soil Moisture Indicators		
Soil Moisture Anomaly (SMA)	P, T, AWC	Intended to improve upon the water balance of PDSI
Evapotranspiration Deficit Index (ETDI)	Mod	Complex calculations with multiple inputs required
Evapotranspiration Deficit Index (ETDI)	Mod	Weekly calculations at different soil depths and complicated to calculate.
Soil Water Storage Index	AWC, RD, ST, SWD	Owing to variations in both soil and crop types, interpolation over large areas is challenging

**Table 3: Most common hydrological indicators**

Index	Input parameters	Additional information
Palmer Hydrological Drought Severity Index (PHDI)	P, T, AWC	Serially complete data is required
Standardised Reservoir Index (SRSI)	RD	Similar calculations to SPI using reservoir data
Standardised Streamflow Index (SSFI) or Streamflow Drought Index (SDI)	SF	Uses the SPI methodology, but with streamflow data instead of precipitation
Standardised Water Level Index (SWI)	GW	Uses SPI methodology, but with groundwater or well level data instead of precipitation
Surface Water Supply Index	P, RD, SF, S	Many methodologies and derivative products are available, but comparisons between catchments are subject to the method chosen.
Aggregate Dryness Index (ADI)	P, ET, SF, RD, AWC, S	No code, but mathematics explained in the literature



Table 4: Most common remotely sensed indicators

Index	Input parameters	Additional information
Enhanced Vegetation index (EVI)	Sat	Does not separate drought stress from other stress
Evaporative Stress Index (ESI)	Sat, PET	Does not have a long history as an operational product
Normalised Difference Vegetation Index (NDVI)	Sat	Calculated for most locations. Difference in drought stress and overgrazing not always clear.
Temperature Condition Index (TCI)	Sat	Usually found along with NDVI calculations
Vegetation Condition Index (VCI)	Sat	Usually found along with NDVI calculations
Vegetation Drought Response Index (VegDRI)	Sat, P, T, AWC, LC, ER	Takes into account many variables to separate drought stress from other vegetation stress
Vegetation Health Index (VHI)		One of the first attempts to monitor drought using remote sensing data
Water Requirement Satisfaction Index (WRSI)	Sat, Mod, CC	
Normalised Difference Water Index (NDWI) and Land Surface Water Index (LSWI)	Sat	Produced operationally using Moderate Resolution Imaging Spectroradiometer data

Table 5: Most common composite indicators

Index	Input parameters	Additional information
Combined Drought indicator (CDI)	Mod, P, Sat	Uses both remotely sensed and surface data
Global Integrated Drought Monitoring and Prediction System (GIDMaPS)	Multiple mod	An operational product with global output for three drought indices: Standardised Soil Moisture Index, SPI and multivariate Standardised Drought Index.
Global Land Assimilation System (GLDAS)	Multiple, Mod, Sat	Useful in data poor regions due to global extent
Multivariate Standardised Drought Index (MSDI)	Multiple, Mod	Available, but interpretation is required
United States Drought Monitor (USDM)	Multiple	Available, but interpretation is required

Table 6: Key to variables used in Tables 2 to 5

AWC	Available water content	Rad	Solar radiation
CC	Crop coefficient	RD	Reservoir
CD	Crop data	S	Snowpack
ER	Eco region	Sat	Satellite
ET	Evapotranspiration	SF	Streamflow
GW	Groundwater	ST	Soil type
LC	Land cover	SWD	Soil water deficit
Mod	Modelled	T	Temperature
Multiple	Multiple indicators used	Td	Dew point temperature
P	Precipitation	W	Wind data
PET	Potential evapotranspiration		

Several indices measure the deviation of precipitation for a given period from historical norms. None of the major indices is inherently superior to the rest in all circumstances, yet some indices are better suited than others for certain uses (UNCCD, 2009). The most commonly used index worldwide is the Standardised Precipitation Index (SPI) (UNCCD, 2009). The SPI is the most important indicator to characterise meteorological droughts around the world. Temperature and ultimately evaporation also play an important role in moisture deficit and the Standardised Precipitation Evaporation Index (SPEI) provides an even better indicator for drought than the SPI (Vicente-Serrano et al, 2010; Beguria et al, 2010). Kim et al (2009), on the other hand, are of the opinion that the Effective Drought Index (EDI) is a better index than the SPI and SPEI

since runoff during heavy storms is considered, which is not the case with the SPI and SPEI.

Tables 2 to 5 provide a summary of available indicators that are easy to use and that are used regularly by different countries. Indicator classification is done according to meteorological, remotely sensed, hydrological and composite indicators.

### Summary

Drought indicators are useful instruments to classify drought quantitatively and limit political interference and lobbying from pressure groups for the declaration of drought disasters. The development of indicator thresholds for different drought categories is explained in a follow up article. 🌍



# SADC REGIONAL CONFERENCE ON DISASTER RISK REDUCTION

The Southern African Development Community (SADC) Regional Disaster Risk Reduction Conference was held on from 26 to 28 March 2018 at the Protea Hotel Fire and Ice Hotel situated in Menlyn, Pretoria. The inaugural SADC Disaster Risk Reduction (DRR) Conference was aptly themed 'Resilience for sustainable development'. The three-day event saw delegates from a number of SADC member countries participating including Zambia, Uganda, Botswana, Mozambique, Malawi, Namibia, Lesotho, Swaziland, Mauritius, Madagascar, Seychelles, Tanzania, Zimbabwe and South Africa. The conference reviewed the progress achieved by the SADC Regional DRR programme towards the goal of managing uncertainty, reducing vulnerability and building resilience for SADC Member States and communities in view of the global and regional frameworks that guide DRR, resilience and sustainable development with a call for renewed commitment to accelerate the implementation of the DRR frameworks

such as the Sendai Framework for DRR (SFDRR) (2015 - 2030) and the African Union Programme of Action for DRR.

Domingos Gove, director of Food Agriculture and Natural Resources (FANR) at the SADC Secretariat, was speaking on behalf of the SADC executive secretary, Her Excellency Dr Stergomena Lawrence Tax, at the opening of the conference and said that the SADC region faces an increasing trend in disaster occurrences, citing as examples, the El Niño induced drought of 2015 and 2016 and acute water shortages attributed to prolonged drought conditions. Gove said there is a greater need for strengthening collaborative efforts to build resilience at all levels in order to secure sustainable development gains for the SADC region now and for the future. He commended the SADC member states for their efforts in strengthening DRR and resilience policy and institutional mechanisms at various levels. Gove added that the approval of the Regional Disaster Preparedness and

Response Strategy and Fund by SADC Council of Minister in August 2017 is an important milestone in the management of disasters in the SADC member states.

Host country South Africa's Dr Mmaphaka Tau, deputy director-general and head of the National Disaster Management Centre at the Department of Cooperative Governance (DCoG), said this inaugural conference provided an excellent opportunity to forge closer collaboration with different players such as government agencies, private sector, academic and research institutions, civil society organisations and international cooperating partners to reduce disaster risks in the region.

Clement Kalonga, senior programme officer for Disaster Risk Reduction at the SADC Secretariat, together with representatives from North West University, World Bank, United Nations Office for Disaster Risk Reduction (UNISDR), European Union and the African Union, realised this inaugural conference.

The conference provided not only an opportunity to share success stories, challenges and future plans and strategies but also instilled a renewed energy and commitment for building synergies, alliances and partnerships not only between member states but also with finance and risk management institutions as well as the private sector and academia. We are hopeful that the outcomes will not only be minutes of a talk shop but actionable strategies and implementation of DRR throughout all SADC member states in order to benefit our communities. Below are the conference outcomes as approved by the delegates and organisers on the last day of the conference.



**Accelerated collaboration and partnerships for the implementation of disaster risk reduction for sustainable development in the SADC region**

We, disaster risk reduction (DRR) stakeholders of Southern Africa (SADC Secretariat, SADC Member States, Heads of Disaster Risk Reduction Agencies, UN agencies, Civil Society Organisations, Academia, private sector, women and youth representatives) having met in Pretoria, South Africa between 26 to 28 March 2018 on the occasion of the SADC Regional Disaster Risk Reduction Conference:

Appreciate the hospitality and warm welcome accorded to the conference delegates by the Government and the people of the Republic of South Africa and commend them for their commitment towards disaster risk reduction.

Recognise the increasing frequency and impact of disasters in the SADC region coupled by the vulnerability context of the region exacerbated by climate change and variability, environmental degradation, rapid land uses changes and increasing urbanisation and how it affects livelihoods, threatens life and undermines the achievement of sustainable development.

Restate our commitment and determination to substantially reduce mortality and morbidity and loss of livelihoods in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries in the SADC region.

Value the important role played by the SADC disaster risk reduction and resilience strategic frameworks that are aligned to global and regional DRR, climate change and sustainable development frameworks.

Recall the adoption by African Union Executive Council of the Programme of Action for the implementation of the Africa Regional Strategy for Disaster Risk Reduction in line with the post-2015 framework for disaster risk reduction through a dedicated programme of action for the implementation of the Sendai Framework in Africa.

Further recall the adoption of the Sendai Framework for Disaster Risk Reduction 2015-2030, the 2030 Agenda for Sustainable Development, the Addis Ababa

Action Agenda, the Paris Agreement on climate change, the New Urban Agenda and the outcomes of the World Humanitarian Summit and their contribution in realisation of the SADC Regional Indicative Strategic Development Plan.

Recognise the significance of financial, technical and academic partnerships and collaborations at global, continental, regional, national and local levels to effectively implement the SADC DRR Strategy in the SADC region.

Recognise the support provided to the SADC Secretariat and member states by international cooperating partners in particular the European Union; the World Bank; the African Development Bank and UN agencies in support of DRR initiatives in the region.

Emphasise the importance of the coordination role of SADC Secretariat in enhancing the regional platform for DRR and supporting harmonisation of DRR policy formulation and implementation for regional and national DRR actors for strengthened multi-sectoral disaster risk reduction, coordination and implementation:

Hereby:

1. Welcome the SADC leadership in setting strategic frameworks and programmes on DRR and resilience in support of the coherent implementation of the post 2015 development and resilience frameworks
2. Call upon the SADC Secretariat, SADC member states and financial, technical and academic partners to move beyond development of policies, plans and strategies to accelerate implementation of coordinated actions
3. Commit to prioritise the enhancement of investments in the prevention of new and reducing existing disaster risks, through the implementation of integrated and inclusive measures that prevent and reduce hazard exposure and vulnerability to disasters and increase preparedness for response, recovery and reconstruction thereby strengthening resilience
4. Call for SADC member states to significantly increase the allocation of annual national budgets for disaster risk reduction and sustain the financial support to the SADC Secretariat for facilitating regional disaster risk reduction initiatives in the SADC region
5. Request international and regional

organisations, technical and financial partners to increase and sustain financial support and technical assistance for the implementation of regional disaster risk reduction initiatives in the SADC region

6. Recognise the SADC regional disaster preparedness and response mechanism; the regional DRR and resilience programme financing and implementation by the SADC Secretariat and member states, with the support of financial and technical partners
7. Commit to implementation of integrated monitoring and impact reporting at community, sub-national, national and regional levels of initiatives aimed at reducing existing disaster risk, hazard exposure and vulnerability to climate change and disasters coherent with sustainable development goals' indicators taking into consideration the specificity of the vulnerability of Small Island States (SIDs)
8. Promote mainstreaming of gender and the inclusion of youth, community-based organisations in the design and implementation of integrated approaches for disaster risk reduction, climate change adaptation and sustainable development
9. Promote a conducive environment for building and exchanging academic and research expertise and promote learning and continued professional education on disaster risk reduction in the SADC region and member states;
10. Recognise the critical role of ecosystems, environmental conservation, spatial and land use planning and the important role of weather, water and climate services, and integrated modernised hydromet services for effective early warning and disaster risk reduction
11. Request SADC Secretariat to facilitate engagement between member states and financial institutions and build capacity on disaster risk financing and risk transfer through international financial institutions, including the African Development Bank, Africa Risk Capacity and the World Bank
12. Request SADC Secretariat to present this communique to the SADC Council of Ministers for their endorsement and urge all stakeholders to facilitate awareness and endorsement of this communique at various levels.

Done on this 28th day of March 2018 in Pretoria, South Africa.



# URGENT NEED FOR MUNICIPALITIES TO PROTECT COMMUNITIES FROM DISASTER RISK



Andries Fourie, senior technologist: Disaster and Risk Management at SRK Consulting in Pretoria

The worsening audit results at municipalities reported by Auditor General Kimi Makwetu earlier this year are a sign that communities are becoming more and more vulnerable to the effects of hazardous events such as floods, fires, civil conflict, environmental degradation and even health related risk such as cholera.

According to Andries Fourie, senior technologist at SRK Consulting, the declining capacity of many district and local municipalities is having a direct impact on their

ability to respond effectively to emergencies and disasters. "In terms of the Disaster Management Act, there is a requirement for 'emergency preparedness' in municipalities,

which is proving difficult to sustain due to their financial and operational status," said Fourie.

Such preparedness is described in the law as a state of readiness enabling organs of state and other institutions to "mobilise, organise and provide relief measures to deal with an impending or current disaster or the effects of a disaster." It also demands that they have the knowledge and capacities to 'effectively anticipate, respond to and recover from the impacts of likely, imminent or current hazard events or conditions'.

In a press statement in May, the Auditor General said that most municipalities' governance and financial affairs, their going-concern status, were not in a good state and that accountability was continuing to fail in local government.

"This situation presents particular challenges to disaster management and other emergency services," said Fourie. "In many cases, they no longer have the resources to carry out their obligations in line with the Act, which leaves these areas vulnerable and in most cases with an unacceptable level of disaster risk."

He outlined the basic formula for disaster risk as the hazard multiplied by vulnerability, divided by the capacity to respond. "That capacity is essentially the municipality's institutional ability to react effectively and timeously to hazardous events," he said. "As that capacity declines, the community's vulnerability increases, resulting in heightened disaster risk."

He noted that his work in assisting municipalities to develop and implement their obligatory disaster management plans has often revealed a lack of access to vital resources, appropriate equipment and backup systems such as power generators and radio communication systems. Scaling back on such equipment, he warned, can compromise the abilities and safety of the emergency services. There are even cases where municipalities are struggling to maintain daily functioning and payment of salaries.

Fourie highlighted the importance of maintaining a disaster fund at municipal level to enable an appropriate response in the event of a disaster. There are also stipulated standards for services such as fire brigade services, which specify the resource levels needed, based on a number of variable factors within a particular area. In addition, municipalities need to have all their assets recorded in GIS format to allow them to understand which infrastructure is affected or can be utilised during an emergency event; this assists the municipalities to execute disaster management plans.

"Effective disaster management plans at local municipality level need to be built progressively on the foundation of the disaster management framework, which is legally required at district municipality level," he said. "The framework supports a phased approach that allows the plan to evolve from level one or entry level through to level three where more institutional capacity and a detailed disaster risk assessment is in place."

SRK Consulting works closely with municipalities to ensure effective and compliant frameworks, plans and assessments for disaster management, applying its wide range of engineering and scientific expertise in service of safer communities.

**SRK Consulting has been a leading Consultant in Disaster Risk Management in South Africa for the last 15 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.**

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Tel: +27 (0) 12 361 9821 | Email: [afourie@srk.co.za](mailto:afourie@srk.co.za)  
[mstols@srk.co.za](mailto:mstols@srk.co.za) | [www.srk.co.za](http://www.srk.co.za)

# ANALYSIS OF AFRICAN MIGRANT WOMEN COPING AND ADAPTION IN SOUTH AFRICA: THE HUMAN AND SOCIAL LIVELIHOOD CAPITALS APPROACH

By Alice Ncube and Andries Jordaan, Director, Disaster Management Training and Education Centre for Africa, Faculty of Natural and Agricultural Sciences and Yonas T Bahta, Department of Agricultural Economics Faculty of Natural and Agricultural Sciences, University of the Free State

South Africa is a country that is perceived by many as a progressive democratic country with one of the highest Human Development Indexes (HDI) according to the United Nations Development Programme (UNDP). In reality, the country has its fair share of challenges such as unemployment, lack of adequate basic services for its citizens and many international migrants mainly from the African continent and the Sub-Saharan region and developmental challenges that go with being part of the African continent. The influx of migrants has negatively affected South Africa politically, socially and economically and the movement of migrants into the country continues unabated due to the socio-economic and geo-political situation in Sub-Saharan Africa. This paper discusses how the Sub-Saharan African migrant women utilised the human and social livelihood capitals

to cope and adapt in South Africa. This was despite the numerous challenges that the country is facing. A case study of 332 randomly sampled migrant women from 23 Sub-Saharan Africa countries resident in balloted six metropolitan cities ie Johannesburg, Pretoria, Ekurhuleni, Bloemfontein, Durban and Cape Town in the four purposively selected provinces of South Africa was used for the study.

A multi variant analysis of the human and social livelihood capital factors identified to be inherent and acquired by the migrant women were analysed and rated after the respondents ranked them. The results indicated that the migrant women used the human (knowledge and skills; capacity to work; health and education), and social (relations of trust and mutual support; networks and connections; collective representation and formal and informal groups) capital factors for coping and

adaptation in South Africa. The human and social capitals factors were acquired in their home countries, developed in the host country and manipulated so that they could cope and adapt. One recommendation that came out of the study was for the policy makers in South Africa to focus on human capital development.

## Introduction

The region of Sub-Saharan Africa (SSA) is depicted as a region of people who are highly mobile (IOM, 2005). Initially, it was mostly unskilled workers who migrated (Taeuber, 1947) but notably then since the 1980s Sub-Saharan African skilled personnel and professionals and even women joined the flow of migration internationally (Adepoju, 2007). According to Ratha and Shaw (2007) most studies on international migration usually concentrated on South North flows, disregarding the fact there are ▶





Figure 1: Map of South Africa showing the metropolitan cities

Source: Adapted from Google maps (2017)

▶ more South South flows of migrants. A total of 14,5 million international migrants were Africans and of these 10 million of them moved within the Sub-Saharan African region including South Africa, which was the focus country of this study. Former colonial links also facilitated Sub-Saharan African international migration making it easier for the movement and settling of people especially from the Southern African Development Community (SADC). However, with globalisation people were extending their migration destinations as the world has become increasingly smaller and easily accessible (Rodrigue, Comtois and Slack, 2013). Hence as many as 23 Sub-Saharan African countries were represented in the study. South Africa had been well-known as a preferred destination of the majority of the African migrants because it was 'perceived' as a thriving and vibrant economy (Campbell, 2007). This was reiterated by Adepoju (2006) who mentioned that international migration in Sub-Saharan Africa is vibrant and not easy to understand as most of the migrants are heading to South Africa that is considered or perceived the most developed economy in Africa.

Migration is undertaken by the people who have raised aspirations, have acquired some financial possessions and valuable information and are not

willing to be categorised as a deprived population anymore (Hatton and Williamson, 2003). Migrants generally are characterised by various socio-economic characteristics like their education levels, marital statuses and age, among many others. Therefore, some people who migrate have some form of survival mechanisms, that is, inherent livelihood capacities or capitals like the human and social among others that they may make use of to cope and later to adapt in host countries. These capitals, coupled with the socio-economic characteristics, information and improved technology, results in the expansion of people's choices and can enable them to migrate globally (Bertucci and Alberti, 2003). It is against this background that the study tried to explore how the African migrant women were making use of the human and social livelihood capital factors to cope and adapt in South Africa. The various demographic and socio-economic characteristics, survival skills and options, the two livelihood capitals namely human and social and other means that facilitate their lives including their well-being in South Africa are evaluated.

#### Materials and methods

The semi-structured questionnaire was used to collect the quantitative data. Overall evaluation of the combined

human and social livelihood capitals was carried out and a total of 100 percent was arrived at. This makes an assumption that 100 percent is the perfect position whereby the livelihood capitals are optimally available to the participants. The migrant women are affected differently by their access and possession of human and social livelihood capitals. These livelihood capitals were evaluated from South Africa's prevailing socio-economic situation whereby the migrant women and all other migrants are vulnerable to some extent, possess some capacities and are limited to some degree by policies; institutional arrangements and processes and also they employ certain livelihood strategies in order to achieve livelihood outcomes in South Africa (DFID, 1999).

The population of the study was all the African migrant women in South Africa who arrived after 1994, had a livelihood and were from Sub-Saharan Africa. The multiple stage sampling technique was then employed. Firstly, four of the nine provinces of South Africa were selected. These were Free State, Gauteng, KwaZulu-Natal (KZN) and Western Cape provinces. Gauteng, KZN and Western Cape provinces were selected because they were the economic hubs of the country. However, Free State Province was selected because of its proximity and availability of the respondents to the researcher. Figure 1 indicates the sampled provinces and the metropolitan cities.

The second stage was the ballot selection of the metropolitan cities. The six metropolitan cities were randomly selected. These were Bloemfontein from the Free State, Johannesburg, Pretoria and Ekurhuleni from Gauteng Province, Durban from KwaZulu-Natal (KZN) and Cape Town from the Western Cape Province. A total of 332 respondents successfully completed the questionnaires, a sample that was purposively selected. 82 respondents were drawn from Bloemfontein, 81 from Cape Town, 78 from Durban, 24 from Ekurhuleni, 36 from Johannesburg and 31 from Pretoria.

All the data collection was done by the researcher and two research assistants who were trained and familiarised with the survey process. Face-to-face interactions with all the participants were done. The survey entailed door-to-door shop visits for those that were in their businesses, at their jobs and also house-to-house visits at the weekends for some of the participants. The survey was conducted both at the

weekends and during the week. The data was collected between March and May 2016. The pre-determined livelihood capital factors from the two livelihood capitals were put forward for the participants to evaluate in a mixed method questionnaire. The human livelihood capital factors identified were education, health, knowledge and skills and capacity to work. The social livelihood capital factors identified were networks and connections, relations of trust and mutual support, informal and formal networks and finally, collective representation. This rating approach was used to rate the human and social capitals to identify the most prominent indicator that influenced African women migrants' coping and adaptation.

### Results and discussion

Below is the synthesis of the demographic characteristics of the respondents.

#### Human capital factors of coping and adaptation

The participants were asked to score each of the factors that contributed to their coping and adaptation in South Africa.

#### -Education livelihood factor

One hundred and seventy five (52,4 percent) of the respondents ranked education as very high, which meant that it contributed to their coping and adaptation in South Africa. 46 (13,9 percent) ranked education high. A total of 55 (16,6 percent) respondents ranked education as moderate. That translated to 276 respondents being positive with the education as a coping and adaptation mechanism in South Africa. Earlier on 308 respondents indicated that they had secondary education, certificates, diplomas, technicon qualifications degrees and post graduate degrees as indicated in Table1 above. That showed that literacy levels were high among the migrant women. Nine percent who ranked education as very low and verbally expressed their sentiments that they were doing jobs that do not need an education. A woman who was selling vegetables in Parow, Cape Town, stated that as a qualified educator she had no choice but to sell vegetables since she could not get a job commensurate with her qualification as was the case in the Canadian labour environment where migrant women had to lower their qualifications and accept lower jobs in order to earn a livelihood (Galabuzi, 2006). Migrant women deskilled themselves in order to survive in South Africa. That had to be looked at seriously since South Africa is grappling with skills shortages and this could be an opportunity to capitalise on the skills of the women migrants already in the country.

Variable	Category	Total	Percent
Age	18-29	111	33.4
	30-39	157	47.3
	40-49	48	14.5
	50-59	12	3.6
	60+	3	.9
	Other	1	.3
Marital status	Single	105	31.6
	Staying with partner	2	0.6
	Engaged	1	0.3
	Married	173	52.1
	Widowed	21	6.3
	Divorced	9	2.7
	Separated	8	2.4
	Never married	11	3.3
	Other	2	3.3
	Level of education	Lower Primary (Grade 3/ Std 1)	2
Upper Primary (Grade 4-7/Std 2-6)		21	6.3
Secondary		193	58.1
Certificate		25	7.5
Diploma		36	10.8
Technicon qualification		5	1.5
University degree		18	5.4
Post graduate qualification		31	9.3
No education		1	.3
Position in the household		Head /sole breadwinner	122
	Wife	165	49.7
	Mother	12	3.6
	Relative	31	9.3
	Other	2	.6
Proficiency in English	Yes	311	93.7
	No	21	6.3
Occupation	Senior officer and managers	19	5.7
	Professionals	13	3.9
	Clerks, service workers	24	7.2
	Service workers, shop and market sales	33	9.9
	Craft related trade workers	45	13.6
	Elementary occupations	198	59.6
Visa at entry	High skills permit	4	1.2
	Work permit	1	.3
	Spousal permit	9	2.7
	Jumped boarder	30	9
	Fake passport	1	.3
	Birth rite	1	.3
	Family unification	5	1.5
	Study permit	22	6.6
	Business permit	4	1.2
	Refugee/asylum	43	13
	Retirement permit	1	.3
	Visitors visa	194	58
	Emergency travel document	1	.3
	Other	16	4.8

Table 1: Respondents' demographic information

Source: Survey results (2016)

#### -Health as a livelihood factor

Two hundred and seventy seven (83,1 percent) of the respondents indicated that health was very important for one to cope and adapt in South Africa. They indicated that they were healthy and those who had once fallen sick were attended to at various public and private health institutions in South Africa. It was noted from the informal interviews done during the survey that the women in Cape Town, Durban and Bloemfontein expressed their satisfaction with how the public health systems and personnel treated them when they sought medical attention. They had praises for the public health systems in those metropolitan cities. However, in Gauteng Province, particularly in Johannesburg, Pretoria and Ekurhuleni, the respondents expressed dissatisfaction with the treatment they received from public health facilities. One woman from Zimbabwe who had breast cancer and was successfully operated at Addington Hospital in

Durban was so happy and attributed to her survival to the health personnel at that institution. In Johannesburg three women from Zimbabwe, Nigeria and Mozambique expressed how they were denied access to food, medication and bedding at some of the hospitals in Gauteng. An Ethiopian woman also gave her account that, "The nurse from South Africa who knows very well how some wealthy Ethiopians live, how much money they have and the luxury cars they drive. This nurse is struggling and so the nurse takes advantage of the good policy of South African health facility sector and is therefore reluctant to attend to them and take their time to afford them treatment." Another Zimbabwean woman related how the nursing assistants denied foreigners food and went to the extent of returning the plate full of food back to the kitchen because, "... lina makwerekwere liyahlupha, liyasiminya..." (...you foreigners are problematic, you are congesting our spaces). Overall the

	Very low	Low	Moderate	High	Very high	Total	Mean score	Factor ranking
<i>Human capital</i>								
Education	30(9.0)	26(7.8)	55(16.6)	46(13.9)	175(52.7)	332(100)	3.93	4
Health	2(.6)	6 (1.8)	19 (5.7)	28 (8.4)	277 (83.4)	332(100)	4.72	1
Knowledge and skills	4 (1.2)	11 (3.3)	24 (7.2)	38 (11.4)	255 (76.8)	332(100)	4.59	3
Capacity to work	4 (1.2)	9 (2.7)	13 (3.9)	31 (9.3)	275 (82.8)	332(100)	4.70	2

**Table 2: Ratings of the human livelihood capital factors**

Note: Values in brackets are percentages  
Source: Survey results (2016)

majority of the migrant women were happy with their health and provision of health in the country. South Africa could be an attractive destination for skilled workforce because of the progressive public health institutions and therefore the policies on access to public health care to all who leave in South Africa need to be fully implemented.

**-Knowledge and skills and capacity to work as livelihood factors**

Knowledge and skills were considered to be very important for survival by migrant women in South Africa. Migrant women who entered on study permits managed to get an education and others managed to upgrade and get higher qualifications thereby increasing their human capital value. That enabled them to increase their bargaining power in the work market, got better remuneration and encountered better working conditions (Dustmann, 2003). The majority of the respondents (76,8 percent) indicated that knowledge and skills were very important for survival. Migrant women surveyed were either employed, were entrepreneurs or were supported by family or friends. They utilised their skills and knowledge to earn a living. Those migrant women used their skills to engage in self-employment, menial jobs like housekeeping and sales assistants. Those who worked in salons used their talents and skills they learnt in their home countries to earn money. Some women expressed their joy in the fact that the housekeeping jobs they were doing in South Africa were not too difficult as they made use of machinery like vacuum cleaners, washing machines and food processors unlike in their home countries. The capacity to work is very high and high at 82,8 percent and 31 percent respectively among migrant women. Table 2 outlined how the respondents rated themselves in terms of the human capital factors under the six capitals that were selected for the study.

Of the four factors identified under human capital factors health ranked highest because of the perceptions

as well as the experiences of the migrant women that the South African health system is one of the best in the continent. South African health system is actually ranked 142 out of 191 countries in the world (WHO, 2000). Capacity to work was ranked second, followed by knowledge and skills and finally education indicates the scores of the human capital and there was a fair balance of the factors which indicated that all the factors enhanced the coping and adaptation of migrant women in South Africa.

It is important for the government of South Africa to put more emphasis on developing its human capital base. By growing to human capital base the government could be assured of economic development that will lead to job creation.

**Social capital**

Social factors that were identified as assisting migrant women survive in the host country were networks and connections, relations of trust and mutual support, informal and formal networks and finally collective representation.

**Networks and connections as livelihood factors**

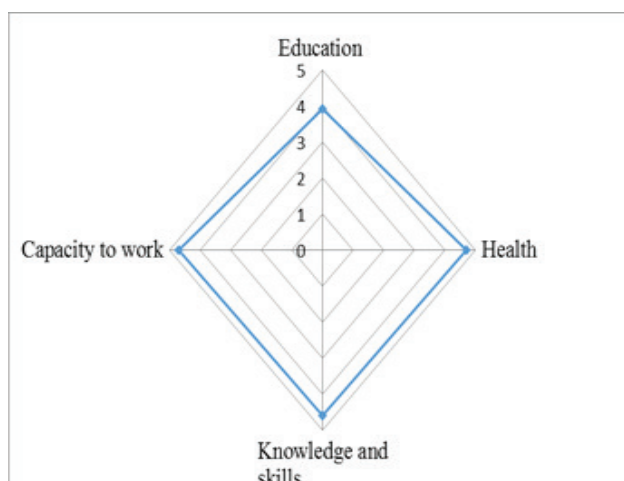
A total of 173 (52,1 percent) of the respondent indicated that they considered networks very high as a survival mechanism. 26 (7,8 percent) considered networks and connections

as high. 47 (14,2 percent) considered networks and connections as moderate. 27 (8,1 percent) of the respondents ranked networks and connections as low and finally 59 (17,8 percent) respondents ranked networks and connections very low.

**Relations of trust and mutual support as livelihood factors**

Relations of trust and mutual support that the migrant women gained from their relations in South Africa also assisted them to cope and adapt. A total of 192 respondents rated the relations based on trust and mutual support high and very high at 10,5 percent and 47,3 percent respectively. The migrant women expressed that networks such as church, family, friends, ethnic groups, political connections colleagues and neighbours were necessary in their lives and had been instrumental in their survival in South Africa. For instance, family support and spousal support assisted migrant women to cope on arrival in South Africa and those relationships also made the women acculturate better in the new environment. This was in agreement with Ibañez (2015) who stated that the locals also had developed relations with foreign women such as being employed to work for them. A number of salon owners indicated that they employed locals as well and they were working well together. Good rapport had been

developed among migrants from various countries and locals and that made coping and adaptation easier. There were some migrant women in Durban, however, who expressed that they did not trust anyone and also felt alienated in South Africa. Those same migrant women even expressed that they would be glad if they got means of returning back to their home countries. Those women had bad experiences of xenophobia attacks, had been denied employment because of being a foreigner or had "... their husbands snatched by local women."



**Figure 1: Human capital factors**  
Source: Survey results (2016)



	Very low	Low	Moderate	High	Very high	Total	Mean score	Factor ranking
<i>Social capital</i>								
Networks and connections	59 (17.8)	27 (8.1)	47 (14.2)	26 (7.8)	173 (52.1)	332(100)	3.68	2
Relations of trust and mutual support	41 (12.3)	35 (10.5)	64 (19.3)	35 (10.5)	157 (47.3)	332(100)	3.70	1
Formal and informal groups	113 (34)	37 (11.1)	52 (15.7)	31 (9.3)	99 (29.8)	332(100)	2.90	4
Collective representation	87 (26.2)	24 (7.2)	81 (24.4)	31 (9.3)	109 (32.8)	332(100)	3.15	3

**Table 3: Ratings of the social livelihood capital factors**

Note: Values in brackets are percentages

Source: Survey results (2016)

**Formal and informal groups as livelihood capital**

Formal and informal groups were identified as very low in terms of coping and adaptation in South Africa. In the work place formal groups were established and in the communities informal groups were formed and both formal (NGOs and faith based organisations and informal groups (Stokvels and burial societies) were necessary for the coping and adaptation of migrant women in South Africa. A total of 113 respondents had very low rating for formal and informal groups as coping and adaptation mechanisms in South Africa. That related well to trust and mutual support issues as a lot of women expressed that it was difficult to rely on others to earn a livelihood. On the other end, 99 respondents rated those formal and informal groups very high.

**Collective representation**

The number of the respondents who rated collective representation as high and very high are 31 and 109 respectively. The migrant women indicated that they used their home country connections like the Zimbabwe Association in South Africa, Cameroonians in South Africa to represent them when they are not fairly treated in South Africa. Some indicated that they utilised religious organisations like Muslim organisations to represent their interests in South Africa. Collective representation as a social capital was useful to the coping and adaptation in a host country.

Figure 3 shows the overall rating of the social capital factors. The highest ranked factor was relations of trust and mutual support, followed by networks and connections, then collective representation and lastly formal and informal groups. A study conducted by Abuzahra (2004) concurs with this finding that Muslim women in the USA coped and adapted better in the presence of a family member in

the host community together with the support they got from their spouses and flexible gender roles. The all-inclusive South African society is commended for making the coping and adaptation of migrant women better in South Africa.

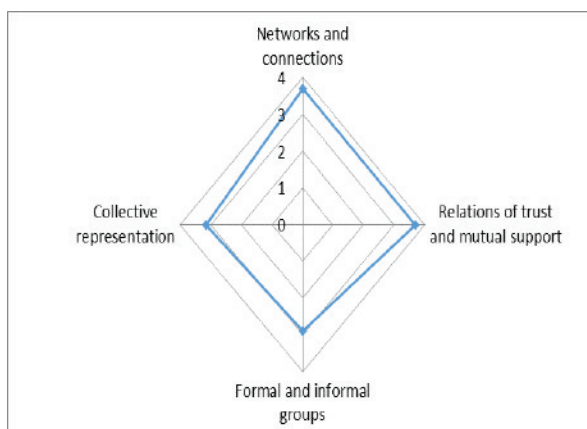
**Conclusions and recommendations**

The human capital factors such as health, education, knowledge and skills and capacity to work have positive impacts on economic growth of host countries (Moody, 2006) South Africa being such country to benefit from this. Companies in South Africa could utilise the migrant knowledge and skills in order for them to be productive rather embark on training locals for such jobs (Zhang, 2011). Through their innovation and skills, migrant women set up their own businesses that could absorb South Africans, train them, increase productivity and help reduce unemployment levels in the country. A healthy and knowledgeable human capital could be beneficial to South Africa. Human capital can be converted into economic capital as migrants will be contributing to the country's gross domestic product through various taxes. Self-employed migrant women not only come into South Africa with a high level of skills and knowledge but they also provide the much needed capital or bring capital investment Dayton- Johnson et al (2009). Hence

the ratings of the capital factors ranged from first: health, second: capacity to work, third: knowledge and skills and fourth: education.

In the social capital sphere the factors such as relations of mutual trust and support proved beneficial for migrant women in South Africa as the migrant women managed to cope and survive with limited or absent wider family support they enjoyed in their countries of origin. Migrant women derived better support and trust from their fellow country women and men as they have similar social backgrounds from their home countries. Their multiple connections ranging from family, friends, relatives, church friends and fellow compatriots offered them support to cope and adapt better in South Africa. The migrant women expressed that the collective representation for them was not that helpful for them as they encountered challenges and they had to tackle them separately. Hence the multi-variant ratings of the social capital factors were first: relations of trust and mutual support, second: networks and connections, third: collective representation and fourth: formal and informal groupings.

The multi-attribute contingent ratings of the livelihood capital factors that the migrant women applied in South Africa made them cope and adapt in the difficulty South African environment. The livelihood capitals and the capital factors are some of the mechanisms for coping and adaptation in South Africa. In order of the value of coping and adaptation mechanisms, the human ie knowledge and skills; capacity to work; health and education and social ie relations of trust and mutual support; networks and connections; collective representation and formal and informal groups factors respectively, are used by the migrant women in South Africa.



**Figure 2: Social capital factors**

Source: Survey results (2016)

# UPCOMING EVENTS

JULY 2018 - DECEMBER 2018

**26 – 27 July 2018**

## **Natural Hazards and Disaster Management 2017**

The conference provides a forum for the exchange of information between academics and practitioners, and a venue for presentation of the latest developments. The corresponding volume of WIT Transactions on Ecology and the Environment containing the papers presented at the meeting has been published in paper and digital format and widely distributed around the world.

**Venue:** Melbourne, Australia

For more information visit:

[www.naturalhazards.conferenceseries.com/](http://www.naturalhazards.conferenceseries.com/)

**16 Aug 2018 - 17 Aug 2018**

## **Urban Risk Reduction and Making Cities Resilient**

Cities are key to tackling local risks and it is highly encouraged for cities to build resilience through sustainable and inclusive development, development that addresses the root causes of existing risks and prevents the creation of new ones.

**Venue:** Lebanon

For more information visit:

[www.unisdr.org/we/inform/events/60019](http://www.unisdr.org/we/inform/events/60019)

**19 - 20 September 2018**

## **Disaster Management Institute of Southern Africa (DMISA) Annual Conference**

Disaster Management Institute of Southern Africa's (DMISA) 34th annual conference. This year's theme is Mobilising Future Ready Resilience. DRR 2018 will focus on reducing direct disaster economic losses, aligning with the UNISDR Sendai 7 Campaign's 2018 Target 3 priority

**Venue:** Kopanong Hotel and Conference Centre, Benoni, Ekurhuleni

For more information contact: Karin Muller, Tel: 011 822 1634 or email: [Karin@disaster.co.za](mailto:Karin@disaster.co.za)

**9 – 13 Oct 2018**

## **Africa-Arab Platform on Disaster Risk Reduction**

For the first time ever, Africa and Arab States will come together to participate in the Africa-Arab Platform on Disaster Risk Reduction. The forum will be hosted by the Republic of Tunisia in cooperation with the African Union Commission (AUC), the League of Arab States (LAS) and the UN Office for Disaster Risk Reduction

**Venue:** Tunis, Tunisia

For more information visit:

[www.unisdr.org/conference/2018/afpr-acdr](http://www.unisdr.org/conference/2018/afpr-acdr)

**13 Oct 2018**

## **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

**17-19 October 2018**

## **Fourth Biennial Conference of the Southern Africa Society for Disaster Reduction**

The Southern Africa Society for Disaster Reduction herewith invites and welcomes academics, researchers, postgraduate students and disaster practitioners to the 4th Biennial Conference of the Southern Africa Society for Disaster Reduction. The conference is hosted by the African Centre for Disaster Studies (North-West University) in partnership with the Durban University of Technology

**Venue:** Coastlands Umhlanga Hotel and Convention Centre, KwaZulu Natal

For more information visit:

<http://sasdir.org/fourth-biennial-conference/>

**5 November 2018**

## **World Tsunami Awareness Day**

For the third year in a row, the 2018 World Tsunami Awareness Day will align with the International Day for Disaster Reduction and the "Sendai Seven Campaign" and focus on Target C of the Sendai Framework for Disaster Risk Reduction. Target C aims at reducing economic losses in relation to Global GDP by 2030

**5 – 7 December 2018**

## **RES/CON 2018**

RES/CON is the premier annual international conference on the practice of successful resilience and disaster management in an evolving global environment.

**Venue:** New Orleans Ernest N Morial Convention Centre

For more information visit: [www.resconnola.com](http://www.resconnola.com)

**12 - 18 May 2019**

## **2019 Global Platform for Disaster Risk Reduction**

The sixth Session of the Global Platform for Disaster Risk Reduction (GP2019) will take place in Geneva, Switzerland from 13 to 17 May, 2019, convened and organized by the UN Office for Disaster Risk Reduction (UNISDR) and hosted by the Government of Switzerland

**Venue:** Geneva, Switzerland

For more information visit:

[www.unisdr.org/conference/2019/globalplatform](http://www.unisdr.org/conference/2019/globalplatform)

# THE DISASTER MANAGEMENT INSTITUTE OF SOUTHERN AFRICA (DMISA)

## DMISA office

### Contact details

**Tel:** 011 822 1634    **Fax:** 086 652 8066

### Email address

karin@disaster.co.za

### Postal address

PO Box 7130  
Primrose Hill  
1417

### Physical address

Suite 5  
123 Rietfontein Road  
Primrose  
Germiston, Gauteng  
South Africa

### Office hours

08h00 to 13h00

### Website

[http: www.disaster.co.za](http://www.disaster.co.za)

### Institute administrator

Karin Muller  
Email: [karin@disaster.co.za](mailto:karin@disaster.co.za)





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**For more information contact**

**Elretha Louw**

Risk Assessment and Management Service Leader

T +27 21 526 6021

E [elretha.louw@arecongroup.com](mailto:elretha.louw@arecongroup.com)

W [www.aurecongroup.com/resilience-management](http://www.aurecongroup.com/resilience-management)

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