



## Message from the NSTF Executive Director

### The tragedy of KZN, 2022

Hardly has one National State of Disaster been lifted, or the next one is declared by the President. The devastation and massive tragedy of the KwaZulu-Natal (KZN) floods have come close on the heels of two years of the pandemic which burned through our population like wildfire. Just when we thought we could go back to normal, the deluge hit us.

The death toll from the torrential rains, floods and landslides has passed 400 or even 440, as reported in the [media](#). The National State of Disaster declared on 17 April is to last three months.

#### **What lessons have we learnt already from the combination of pandemic and now the floods?**

The pandemic ensured that we know how to handle the legislative side: the National State of Disaster could be declared immediately because the legislative framework and the processes to handle a disaster are in place, unlike at the start of the pandemic in March 2020.

The pandemic has taught us as South Africans to work together, and various parts of government to work together. We have also learned that a dedicated fund to which everyone can contribute is essential. Now the Solidarity Fund established for the pandemic, is available for use in the crisis in KZN. We have also learnt an expensive, painful lesson that theft and corruption can make all the dedicated resources disappear. Now critical measures are being taken to prevent a repeat of this kind of robbery.

[Busi Mavuso, CEO of Business Leadership South Africa \(BLSA\), writes in Moneyweb](#) on 19 April:

*It is critical that business, government and civil society work together. That relationship is now key to the KwaZulu-Natal response with the Solidarity Fund playing a central role. The Fund has proven to be an accountable and effective mechanism to raise and deploy funds, one that the public can trust. It draws together leaders from business, civil society and the public sector to ensure full accountability.*

*I have been heartened by the many businesses, including BLSA members, that have rushed emergency support, including donations of cash and goods, to those affected. I applaud the work of charities that have rushed to the scene and become an important conduit for us to direct resources to those most affected. The national state of the disaster declared yesterday means that government will be able to effectively get emergency services and relief into the areas and rescuing those stranded. The voucher system that government is now implementing to give those who have lost their homes, to purchase rebuilding materials is an excellent approach, but it will have to be carefully monitored to ensure the vouchers get to the right people. Limiting the use of the vouchers to rebuilding materials is a good step toward ensuring the money is spent on the right things.*

*The president last night rightly pointed out that the disaster has national implications and that future weather could strike other parts of the country. The president established the Presidential Climate Commission in December 2020, made up of all stakeholders, including business. The commission has been focused on ensuring a just transition from our fossil-fuel based economy to a greener future. However, the flood disaster highlights that we need to also be urgently applying ourselves to the challenges that climate change presents to our economy – from agriculture to manufacturing. We should transition to ensure we mitigate climate change, but we have to also be realistic about the fact that change has happened which presents material threats to us.*

*The priority is the urgent support necessary for the province to recover from the crisis and organised business will strongly support this effort. But we must also be swift in learning the lessons and ensuring greater resilience across the country. I will be working with our social partners to deliver that.*

[KwaZulu-Natal Premier Sihle Zikalala](#) said people who were residing on riverbanks will receive “priority attention” as they are frequently affected during floods. He said that buildings should not have been allowed to be erected on riverbanks. During a media briefing, Zikalala said there are several houses that are still perched in the bed of rivers. He plans to prohibit buildings on riverbanks across municipalities in the province, according to SABC News. The premier added that officials should ensure stricter measures to prevent people from building in high-risk areas. A preliminary assessment shows that more than 3000 homes were destroyed during the floods.

The majority of the people affected by the recent floods in KZN had homes built along riverbanks. More than 13 500 people have been affected and thousands are displaced.

*Vusi Mabusu says in the article cited above: The damage in KwaZulu-Natal partly reflects a lack of application of existing regulations as well as poor maintenance of infrastructure. In some cases infrastructure failed because it had not been kept in full operating condition, but it is also the case that many houses were built illegally and informal settlements sprung up in low-lying areas vulnerable to flooding.*

*We need to study and assess the risks to our infrastructure and ask if we are as prepared as we can be for what is coming. Organised business would be a willing partner in undertaking such an assessment. It would be the right lesson to take from the disaster in KwaZulu-Natal and would help to ensure reconstruction there is optimal. But it will also help to ensure we take the steps necessary to improve resilience in the rest of the country, to ensure that future extreme weather events do not have as great a toll on lives and livelihoods as we have seen last week.*

#### **Could this disaster have been foreseen?**

The recent [Intergovernmental Panel on Climate Change](#) (IPCC) Report says:

*Considering climate change impacts and risks in the design and planning of urban and rural settlements and infrastructure is critical for resilience and enhancing human well-being. The urgent provision of basic services, infrastructure, livelihood diversification and employment, strengthening of local and regional food systems and community-based adaptation enhance lives and livelihoods, particularly of low-income and marginalised groups. Inclusive, integrated and long-term planning at local, municipal, sub-national and national scales, together with effective regulation and monitoring systems and financial and technological resources and capabilities foster urban and rural system transition. Effective partnerships between governments, civil society, and private sector organizations, across scales provide infrastructure and services in ways that enhance the adaptive capacity of vulnerable people. (SPM.C.2.6)*

There were warnings since long before 2011 when the Conference of the Parties (COP) to the Paris climate agreement [COP17](#) was hosted in Durban, that global warming would lead to unprecedented storms affecting areas close to coasts. In more recent years, hurricanes, typhoons and cyclones have left destruction of a scale seldom seen before, and occur so often that there is hardly time to rebuilt and prepare. Is it reasonable to expect preparation for a disaster not yet experienced? (The United Nations Framework Convention on Climate Change has near universal membership (197 Parties) and is the parent treaty of the 2015 [Paris Agreement](#). The main aim of the Paris Agreement is to keep the global average temperature rise this century as close as possible to 1.5 degrees Celsius above pre-industrial levels. The COP is held annually and hosted in different countries.)

For decades there have been warnings about climate change. Severe storms have been on the increase across the globe. The latest IPCC Report says clearly that it is too late to turn around the upward temperature climb. Where is the mitigation and adaptation strategies to cope with the inevitable climate change that have been talked about for decades?

The KZN floods are different from the destructive storms that originate over the oceans, in that it was caused by heavy rainfall that caused the rivers to come down, breach their banks and cause flooding. At St Lucia, the river mouth even burst open from the force of the river heading towards the sea. The adaptation measures to prevent a re-occurrence may be different from those that would curb a strong storm from the sea.

Perhaps the size of the disaster could not have been foreseen. But among the factors that created 'a perfect storm' was the housing crisis. People build their dwellings on unstable riverbanks, despite regular flooding, because there is nowhere else to go, and because it is useful living beside a river that provides for some of your water needs when there is no universal water provision by the city.

### **Floods are not a new phenomenon close to the coast in KZN**

However, today's floods are worse than the floods of 1987, and the floods of 1984, overtaking them as the 'most devastating' to have occurred.

[A piece published in 2018](#) explains:

*Between 28 and 30 September 1987, the central and southern part of Natal were ravaged by floods. Those were [floods that were amongst the most devastating](#) to have occurred in South Africa. The main cause was an intense "cut-off" low pressure system off-shore which co-incident with a Spring high tide. Destruction of property was catastrophic, nearly 400 people died and about 50 000 were left homeless. Damage to agriculture, communications, infrastructure and property amounted to R400 million (report: De Villiers et al, 1994).*

*The Mgeni and Mvoti rivers had flood duration periods of up to 24 hours and this caused dramatic erosion. In the Mgeni the island near the mouth was totally removed and scour of generally about 2m took place. In the Mvoti the river channel, normally 35m, widened to about 900m. Large quantities of sediment were deposited over the flood plain. Many bridges were washed away. The greatest disruption to humans was caused by the destruction of the Mdloti and Tugela river bridges on the N2 highway (report: Badenhorst et al. 1989).*

*The 1984 floods were caused by Cyclone Domoina which developed on 16 January 1984 along the northeastern coast of Mozambique and struck the African continent on 27 January. The storm moved south and for the following five days torrential rain fell over Mozambique, northern KwaZulu-Natal, Mpumalanga and Swaziland, reaching as far south as Durban. The cyclone caused widespread flooding; left thousands of people homeless and 242 deaths were recorded in southeastern Africa. In South Africa alone damage of more than R100 billion was caused to agriculture, communications and nature reserves (Kovács et al, 1985). The rainfall peaked during this storm at 950 mm and most river basins were flooded. The most rain to fall in one day at one point ever recorded in South Africa was at the St Lucia Lake (597mm) (Grobler, 2003).*

Currently the numbers are still being established in KZN, but already it can be seen that they are far worse than those of 1987 and 1984. Did we learn from those at the time? Between then and now, we seem not to have heeded the warnings that several flooding incidents brought with them – both in South Africa and further up the east coast.

### **The dire warnings in IPCC Reports**

The IPCC (the United Nations body for assessing the science related to climate change) has been warning of increasing climate change for many years, without their findings and recommendations being taken seriously until recently. Although people across the world are increasingly experiencing the impacts of climate change, the latest IPCC report, the Sixth Assessment Report (April 2022) contains a ray of hope, stating that all is not lost, and that governments across the world can still make a difference with their pro-climate, mitigation and adaptation actions. It recommends measures to adapt to the adverse effects of climate change. The IPCC is now in its sixth assessment cycle, in which it is producing the Sixth Assessment Report (AR6) with contributions by its three Working Groups and a Synthesis Report, among others.

**[Remarks by the IPCC Chair](#) during the Press Conference presenting the Working Group III contribution to the Sixth Assessment Report, 4 April 2022**

**First Intervention**

*We have just heard an important message from United Nations Secretary-General António Guterres.*

*The IPCC report before us today is powerful evidence that we have the potential to mitigate climate change.*

*We are at a crossroads. This is the time for action. We have the tools and know-how required to limit warming and secure a liveable future.*

*Today's report marks the completion of the scientific trilogy. It is the last piece of the three IPCC Working Groups contributions to the Sixth Assessment Report (AR6).*

*This report provides the most recent scientific knowledge for sound decision-making with unique information about all sectors to complement the regional aspects provided by Working Groups I and II.*

*It confirms that the IPCC is the authoritative scientific voice of the United Nations on climate change. IPCC is the unique interface between climate science and policy-making.*

*We will bring closure to the Sixth Assessment Cycle with the Synthesis Report this autumn.*

*With this, in the period between COP26 in Glasgow and COP27 in Egypt, the IPCC will have provided three vitally important and policy-relevant reports and the Synthesis Report, and will be presenting the findings of these reports, as mandated by last year's COP in Glasgow. I'm confident that these will be central to the climate talks, decision-making and action on a global, regional and national level.*

**Second Intervention**

*The critically important Working Group III contribution assesses progress made in mitigation and options available for the future. Building on previous reports, it is looking at enabling conditions across sectors and systems in the aspects of the technological, environmental, economic and social dimensions.*

*The preceding IPCC reports are clear – human-induced climate change is widespread, rapid, and intensifying. It is a threat to our well-being and all other species. It is a threat to the health of our entire planet. Any further delay in concerted global climate action will miss a rapidly closing window.*

*This is the report that gives us options. It offers strategies to tackle the critical questions of our time. How can we reduce greenhouse gas emissions? How can we sequester carbon? How can the buildings, transport, cities, agriculture, livestock, and energy sectors be more sustainable?*

*This report also tells us the status of global emissions. It shows clearly that we are slipping from a trajectory to limit global warming to 1.5°C.*

**From the full [report of Working Group II on Adaptation](#)<sup>i\*</sup>:**

There is a rapidly closing window of opportunity for global action:

*The cumulative scientific evidence is unequivocal: Climate change is a threat to human well-being and planetary health. Any further delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all. SPM.D.5.3*

**Land, Ocean and Ecosystems Transition**

The health of wetlands and rivers, land use planning (including no build zones) and forest management can make a big difference:

*Adaptation to water-related risks and impacts make up the majority of all documented adaptation. For inland flooding, combinations of non-structural measures like early warning systems and structural measures like levees have reduced loss of lives. Enhancing natural water retention such as by restoring wetlands and rivers, land use planning such as no build zones or upstream forest management, can further reduce flood risk. SPM.C.2.1 (p 23)*

### **Urban, Rural and Infrastructure Transition**

We have to adapt to, and be prepared for, the rising sea level and land subsidence (sinking) in coastal cities:

*Sea level rise poses a distinctive and severe adaptation challenge as it implies dealing with slow onset changes and increased frequency and magnitude of extreme sea level events which will escalate in the coming decades. Such adaptation challenges would occur much earlier under high rates of sea level rise, in particular if low-likelihood, high impact outcomes associated with collapsing ice sheets occur. Responses to ongoing sea level rise and land subsidence in low-lying coastal cities and settlements and small islands include protection, accommodation, advance and planned relocation. These responses are more effective if combined and/or sequenced, planned well ahead, aligned with sociocultural values and development priorities, and underpinned by inclusive community engagement processes. SPM C.2.8.*

A variety of adaption measures is best:

*There are a range of adaptation options, such as disaster risk management, early warning systems, climate services and risk spreading and sharing that have broad applicability across sectors and provide greater benefits to other adaptation options when combined. For example, climate services that are inclusive of different users and providers can improve agricultural practices, inform better water use and efficiency, and enable resilient infrastructure planning. SPM.C.2.13 (p 26)*

The bad news is that some limits to human adaptation have been reached, but the good news is that we can expand those limits by taking action:

*Soft limits to some human adaptation have been reached, but can be overcome by addressing a range of constraints, which primarily consist of financial, governance, institutional and policy constraints. For example, individuals and households in low lying coastal areas in Australasia and Small Islands and smallholder farmers in Central and South America, Africa, Europe and Asia have reached soft limits (medium confidence). Inequity and poverty also constrain adaptation, leading to soft limits and resulting in disproportionate exposure and impacts for most vulnerable groups. Lack of climate literacy at all levels and limited availability of information and data pose further constraints to adaptation planning and implementation. SPM.C.3.1 p 27*

### **The costs:**

Some more good news is that climate finance has increased, but (bad news) global financial flow is insufficient to implement widespread adaptation measures. Most of the global tracked finance was applied to mitigation measures. The burden on developing and least developed countries suffer more because damage from events caused by climate change erode their economies:

*Financial constraints are important determinants of soft limits to adaptation across sectors and all regions. Although global tracked climate finance has shown an upward trend since AR5, current global financial flows for adaptation, including from public and private finance sources, are insufficient for and constrain implementation of adaptation options especially in developing countries. The overwhelming majority of global tracked climate finance was targeted to mitigation while a small proportion was targeted to adaptation. Adaptation finance has come predominantly from public sources. Adverse climate impacts can reduce the availability of financial resources by incurring losses and damages and through impeding national economic growth, thereby further increasing financial constraints for adaptation, particularly for developing and least developed countries. SPM.C.3.2 P 27*

The poor and marginalised are the most affected. Inequality will increase if inclusive planning initiatives are not implemented:

*Maladaptation especially affects marginalised and vulnerable groups adversely (e.g., Indigenous Peoples, ethnic minorities, low-income households, informal settlements), reinforcing and entrenching existing inequities. Adaptation planning and implementation that do not consider adverse outcomes for different groups can lead to maladaptation, increasing exposure to risks, marginalising people from certain socio-economic or livelihood groups, and exacerbating inequity. Inclusive planning initiatives informed by cultural values, Indigenous knowledge, local knowledge, and scientific knowledge can help prevent maladaptation.* SPM.C.4.3 p 28

### **South Africa's contribution to climate science**

On Tuesday, after the Easter weekend, the shocking news broke that a young climate scientist had died in a freak accident on 16 April 2022. Ndoni Mccunu was a PhD candidate, social entrepreneur, and an inspiration to everyone who knew her (and knew of her). She founded the Black Women in Science (BWIS). She had studied under top climate scientist Prof Robert Scholes of Wits University, who also passed away suddenly last year (28 April 2021). Bob Scholes worked on the IPCC reports and made a huge contribution to the work of the Panel.

Prof Scholes was one of the top 1% of environmental scientists globally and recognised as a leading researcher within environmental science, systems ecology, savannah ecology, and global change. He was also one of South Africa's few National Research Foundation A-rated scientists in 2017. In 2015, [Prof Scholes received an NSTF-South32 award](#) for his contribution to science over a lifetime.

In 2017 the NSTF hosted Bob Scholes to give an address [Give me the evidence for climate change](#). The talk was thought and debate-provoking. Although the human contribution to global warming had been accepted as general knowledge by vast parts of global society for many years, there was a new tendency to refute this common wisdom (led by the then US President, Donald Trump), as well as scepticism about the scientific evidence that informs the conclusion.

Scholes reminded us of the critical state of the global climate and the complexity of the earth's various systems. He thoroughly unpacked the evidence for almost two hours. His credentials are such that he is one of the best experts in the world to elucidate this specialised science. Listen to his talk on [YouTube](#).

He emphasised that although the scientific studies continue to tease out the details, there is no doubt about the basics – that dramatic climate change is taking place and that humankind bears substantial responsibility for it.

When Prof Scholes died in 2021, I wrote: Now that there is finally acknowledgement by the US and many other countries of the damage wrought by humankind through its incessant pouring of CO<sub>2</sub> into our planet's atmosphere; now that the tide has turned towards scientific advice; Bob Scholes has left us, with our feet firmly on the earth. Bob will be remembered, and hopefully his memory will spur people on to do whatever it takes to bring us back from the brink of destruction. We have lost a great South African, "a giant in the field of climate science, not only in South Africa, but in the world," as the University of Witwatersrand (Wits) called him in the statement issued after his death. They pointed out that Scholes was "among the top one per cent of environmental scientists worldwide, based on citation frequency". The tribute from the IPCC shows that they have lost one of their stalwarts (Obituary: Bob Scholes — IPCC). They say the IPCC "has learned with shock and sadness of the death of long-time IPCC author Bob Scholes, who... was an author of the Third, Fourth and Fifth IPCC Assessment Reports". Scholes also led many aspects of the expert work of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), including co-chairing the Land Degradation and Restoration Assessment. Recently, together with the Co-Chair of IPCC Working Group II, Hans-Otto Pörtner, he co-chaired the Scientific Steering Committee of the IPCC-IPBES co-sponsored workshop on climate change and biodiversity that was held in December 2020.

Now that we have lost Bob Scholes and one of his most promising students, it is up to our climate scientists, and those in related fields, to continue their valuable research and advise the government on measures to adapt to the adverse effects of climate change.

Fortunately government is listening.

The [Presidential Climate Commission \(PCC\)](#) was established by President Ramaphosa. Currently it is focusing on the crucial task of producing a Framework for a Just Transition to a Decarbonised Economy. The NSTF was approached to host an [online consultative workshop](#) which was held on 8 April. It is clear that the government takes this task seriously and I hope that the recommendations will indeed be implemented successfully. As Busi Mavuso alluded (here above), the PCC will have to address even more than the energy transition, and tackle urgent adaptation issues.

## **Returning to the IPCC Report:**

### **Energy System Transition**

*Within energy system transitions, the most feasible adaptation options support infrastructure resilience, reliable power systems and efficient water use for existing and new energy generation systems. Energy generation diversification, including with renewable energy resources and generation that can be decentralised depending on context (e.g., wind, solar, small scale hydroelectric) and demand side management (e.g., storage, and energy efficiency improvements) can reduce vulnerabilities to climate change, especially in rural populations. Adaptations for hydropower and thermo-electric power generation are effective in most regions up to 1.5°C to 2°C, with decreasing effectiveness at higher levels of warming. Climate responsive energy markets, updated design standards on energy assets according to current and projected climate change, smart-grid technologies, robust transmission systems and improved capacity to respond to supply deficits have high feasibility in the medium- to long-term, with mitigation co-benefits. SPM.C.2.10*

*Political commitment and follow-through across all levels of government accelerate the implementation of adaptation actions (high confidence). Implementing actions can require large upfront investments of human, financial and technological resources (high confidence), whilst some benefits could only become visible in the next decade or beyond (medium confidence). Accelerating commitment and follow through is promoted by rising public awareness, building business cases for adaptation, accountability and transparency mechanisms, monitoring and evaluation of adaptation progress, social movements, and climate related litigation in some regions (medium confidence). Institutional frameworks, policies and instruments that set clear adaptation goals and define responsibilities and commitments and that are coordinated amongst actors and governance levels, strengthen and sustain adaptation actions (very high confidence). Sustained adaptation actions are strengthened by mainstreaming adaptation into institutional budget and policy planning cycles, statutory planning, monitoring and evaluation frameworks and into recovery efforts from disaster events (high confidence). Instruments that incorporate adaptation such as policy and legal frameworks, behavioural incentives, and economic instruments that address market failures, such as climate risk disclosure, inclusive and deliberative processes strengthen adaptation actions by public and private actors (medium confidence). SPM.C.5.1 (p 29)*

*Inclusive governance that prioritises equity and justice in adaptation planning and implementation leads to more effective and sustainable adaptation outcomes. Vulnerabilities and climate risks are often reduced through carefully designed and implemented laws, policies, processes, and interventions that address context specific inequities such as based on gender, ethnicity, disability, age, location and income. These approaches, which include multi-stakeholder co-learning platforms, transboundary collaborations, community-based adaptation and participatory scenario planning, focus on capacity-building, and meaningful participation of the most vulnerable and marginalised groups, and their access to key resources to adapt. SPM.C.5.6 (p 30)*

### **Conditions for Climate Resilient Development**

Worldwide climate resilient development action is more urgent than previously assessed:

*Evidence of observed impacts, projected risks, levels and trends in vulnerability, and adaptation limits, demonstrate that worldwide climate resilient development action is more urgent than previously assessed in AR5. Comprehensive, effective, and innovative responses can harness synergies and reduce trade-offs between adaptation and mitigation to advance sustainable development. SPM.D.1*

**There is a window for action. The constraints to attaining climate resilience grow worse every time the earth gets warmer in general, in particular beyond a 1.5 degrees increase. We must act now!**

*There is a rapidly narrowing window of opportunity to enable climate resilient development. Multiple climate resilient development pathways are still possible by which communities, the private sector, governments, nations and the world can pursue climate resilient development – each involving and resulting from different societal choices influenced by different contexts and opportunities and constraints on system transitions. Climate resilient development pathways are progressively constrained by every increment of warming, in particular beyond 1.5°C, social and economic inequalities, the balance between adaptation and mitigation varying by national, regional and local circumstances and geographies, according to capabilities including resources, vulnerability, culture and values, past development choices leading to past emissions and future warming scenarios, bounding the climate resilient development pathways remaining, and the ways in which development trajectories are shaped by equity, and social and climate justice. SPM.D.1.1*

### **Climate Resilient Development for Natural and Human Systems**

Inclusive planning and investment are essential to make cities climate resilient. Coastal cities have a particularly important role to play:

*Urban systems are critical, interconnected sites for enabling climate resilient development, especially at the coast. Coastal cities and settlements play a key role in moving toward higher climate resilient development given firstly, almost 11% of the global population – 896 million people – lived within the Low Elevation Coastal Zone<sup>49</sup> in 2020, potentially increasing to beyond 1 billion people by 2050, and these people, and associated development and coastal ecosystems, face escalating climate compounded risks, including sea level rise. Secondly, these coastal cities and settlements make key contributions to climate resilient development through their vital role in national economies and inland communities, global trade supply chains, cultural exchange, and centres of innovation. (SPM.D.3.3 (p 31)*

### **Achieving Climate Resilient Development**

*It is unequivocal that climate change has already disrupted human and natural systems. Past and current development trends (past emissions, development and climate change) have not advanced global climate resilient development. Societal choices and actions implemented in the next decade determine the extent to which medium- and long-term pathways will deliver higher or lower climate resilient development. Importantly climate resilient development prospects are increasingly limited if current greenhouse gas emissions do not rapidly decline, especially if 1.5°C global warming is exceeded in the near term. These prospects are constrained by past development, emissions and climate change, and enabled by inclusive governance, adequate and appropriate human and technological resources, information, capacities and finance. SPM.D.5*

### **The other major climate change effect: drought**

Reflecting on the drought in the Western Cape in 2017:

*Water, water, everywhere, /Nor any drop to drink.*

*The above famous quotation comes from the poem by Samuel Taylor Coleridge called **The Rime of the Ancient Mariner**, written in 1797-98. The quote seems pertinent when a large city bordered by two oceans runs short of water.*

Although many people in our country have survived on only a few drops a day for many years, there have increasingly been dire water shortages affecting a variety of communities across the country. One of the world's top tourist destinations, Cape Town, was in the process of drying up in 2016. The Premier of the Western Cape declared the province a disaster area in May 2017 due to shrinking water supplies.

The Institute of Security Studies (ISS) had already warned the country in 2014 of the water crises to come, when it used a sophisticated forecasting system to model water supply and demand. Even if all the laudable strategies of the government were to be implemented (they weren't), it still could not ward off the crisis indefinitely.

Compare today's devastation in KZN. There was (is) no drinkable water supply even as vast areas were (are) flooded.

In 2016 the NSTF hosted a discussion forum on: [The Skills drought in the Water sector](#). Some of the main points from this discussion were:

- Engineering skills of all kinds and at all levels are critically important if we are to solve our water problems, but there is a dire shortage of professional engineers
- Maintenance and renewal of infrastructure are crucial. Large parts of South Africa have old infrastructure that needs urgent attention.

Thus, already six years ago, the problems with water provision had long been identified. South Africa is still dragging this burden as the years move on. As we feel these climate change impacts ever more intensely, it is self-evident that government as well as the private sector must move with speed.

***The opinions expressed above are those of the Executive Director, Ms Jansie Niehaus, and do not necessarily reflect the views of the [Executive Committee](#) or [members](#) of the NSTF.***

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<sup>i</sup> To improve readability, I have omitted the indications of the level of confidence of each statement. These range from medium confidence to very high confidence. Please see the full report for these.

While quoting the paragraphs directly from the report, I insert a sentence or two to convey its essence.