SOUTH AFRICAN
ACADEMY OF ENGINEERING

Building a better post-COVID Water Sector

Introduction and summary of recommendations

To reduce the risk of contracting and spreading COVID-19, people were urged to wash their hands frequently. A common response was: "How can we wash our hands without water?"

Water security is essential for life and livelihoods but COVID19 has shown that South Africa's water security is tenuous and declining. If this continues, the next crisis that South Africa faces could be caused by widespread failures of water services.

There are many challenges that need to be addressed:

In rural areas and small towns, water supply and sanitation services are often not fit for purpose. Water supply is erratic and unsafe while sanitation provision is dysfunctional or non-existent. In such circumstances, not only is it difficult for the people in the communities concerned to adopt recommended COVID-19 hygiene practices but they are left vulnerable to many other water-related diseases.

However, the problems go much wider. As Cape Town's 'Day Zero' experience showed, even our major urban and industrial hubs are vulnerable. If there is a similar drought in the interior of the country over the next decade, Cape Town's crisis could be repeated on an even larger scale. This would threaten the services on which tens of millions of people depend. But it will also impact on energy supplies, industry and agriculture, undermining the economic base on which all social life depends.

COVID-19 will leave South Africa even poorer and weaker than it was prior to the crisis. If the vulnerabilities in the water sector are not effectively addressed, the resulting failures will further aggravate unemployment and poverty. Post-COVID plans must therefore be prioritised to tackle the right issues in the right way to put the country back onto a more sustainable development path.

The South African Academy of Engineering brings together many of South Africa's most eminent engineers as part of a global network. Advisory Note 1 below presents our initial findings and recommendations on priority strategic infrastructure investments for water security. It is addressed to government and everyone who wants to help South Africa recover from this crisis and achieve long term resilience and sustainable development. Our overriding

message is that, unless we move forward in partnership to fix the country's water sector, our future is at risk.

Global wisdom is that, post-disaster, it is important to 'build better', to learn from the experiences gained and to build societies that are more resilient to future disasters. In that spirit we suggest the following four high-level priorities for action:-

- ***Prioritise strategic investments*** to implement an urgent infrastructure development programme effectively and efficiently to create jobs, promote economic activity, and sustain the water security of key urban and industrial centres;
- ***Halt the destructive cycle of wasteful investment and incompetent management in our municipalities*** as failure to sustain water and sanitation services is leaving communities frustrated, impoverished and vulnerable to disease;
- ***Rebuild the nation's water management institutions*** by developing and empowering a new cadre of water resource planners and managers to monitor, guide and manage the use of the country's scarce water resources;
- ***Work with citizens to improve water management*** by sharing information on the state of our services and natural resources and mobilising local action to address local problems.

We believe that partnerships between the public, private and professional sectors can drive effective action on these priorities. The Fellows of SAAE are available to support the Ministers of Water and Sanitation and Cooperative Government and their local and national partners to "build better" and achieve these common goals.

This first Advisory Note recommends the implementation of an urgent strategic infrastructure investment programme to create jobs, promote economic activity, and sustain the water security of key urban and industrial centres. The other topics will be addressed in subsequent Advisory Notes.

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Advisory Note 1: Prioritising strategic investments

The mission of the South African Academy of Engineering (SAAE) is "To promote the technological welfare of the nation by marshalling the knowledge and insights of eminent members of the South African engineering profession, elected by their peers, and to be a source of expert advice on matters pertaining to global competitiveness and quality of life for the nation".

In line with this goal, and in the light of the many challenges posed by the COVID-19 epidemic, SAAE Fellows have reviewed the issues that need to be addressed in the country's water sector in order to contribute to Post COVID-19 recovery and to support the nation in rebuilding for the future. Our particular concern has been to identify and prioritise measures that must be taken to ensure that the water sector does not in itself become the source of future crises.

SAAE recognises that the sustainable management of South Africa's water is critical to the achievement of the country's development goals. In 2018, Fellows of the Academy participated in consultations and commented in detail on the draft National Water Supply and Sanitation Masterplan which has now been tabled.

Regrettably, there has been little progress in the implementation of the Master Plan, due to a lack of prioritisation and focus, aggravated by institutional dysfunction at all levels. Given the social and economic pressures that South Africa will face in the post-COVID period, effective action to sustain and strengthen our water security is now required.

This Advisory Note summarises some of our initial findings and recommendations on the key infrastructure interventions that are needed in the large systems that sustain our economy's water security – and thus the lives and livelihoods of all South Africans. It is presented to inform the future plans of government and the wider South African community. Further advisory notes will be presented on:-

i) the measures needed to achieve water security at household level;

ii) the interventions required to build a new cadre of water planners and managers; and

iii) actions to inform and engage all South Africans in the management of our precious water resource.

In preparing this Advisory Note, we have taken a strategic, long term, perspective which is guided by the approach of the UN's International Strategy for Disaster Reduction (UNISDR), driven by the UN Office for Disaster Risk Reduction (UNDRR). The UNDRR encourages a structured approach to risk reduction and emphasises that an important step to reduce the risk of future disasters is to "build better" after each disaster event. The COVID-19 epidemic is providing such an opportunity.

Water, society and economy

Access to adequate water (and sanitation) is both a fundamental social right and key to supporting the economy and sustaining a healthy environment. Any failure in the water systems on which society depends thus puts the functioning of the whole society at risk. This is why the World Economic Forum has consistently identified threats to water security as amongst the top ten global risks.

South Africa's social and economic development is supported by integrated bulk water systems developed over many years to supply water to Gauteng, Cape Town, eThekwini and other large urban areas, as well as to many mines, power stations and agricultural enterprises. To maintain resilient supplies, these systems depend on sound long-term planning that looks at least two decades into the future. This allows timely infrastructure investments to be made to mitigate climate risks and support operational management based on continual monitoring of both water users and the natural resource base on which they depend.

The governance and management of these systems is stressed and slowly failing; the Department of Water and Sanitation, municipalities and water boards are losing their technical capacity; infrastructure investments are not keeping pace with population and economic growth; and operational deficiencies are emerging that are reducing the security of supply. As a result, supply failures have already undermined the economic activity on which our lives and livelihoods depend. The same problems are repeated at a smaller scale in many small towns and rural areas where local water supply systems no longer provide safe and reliable supplies. Urgent interventions are required to address this creeping, slow-onset, disaster.

Our COVID-19 response demands focus and prioritisation

Many of the interventions needed to ensure water security had already been identified before the start of the present COVID-19 epidemic. The epidemic has, however, added to the urgency because the funding available to the water sector will be more constrained than ever. So it will need to be deployed – and redirected if necessary - in a manner that achieves maximum impact.

The epidemic has resulted in the greatest economic crisis since the Great Depression of the 1930s. In response to that historic crisis, many countries invested heavily in infrastructure, which addressed immediate social challenges and increased their resilience to natural and economic shocks and gave them long-term competitive economic advantage. Similar stimulus packages were implemented in response to the global financial crisis of 2007-2008, but these tended to be more short term with less focus on building the infrastructure for a sustainable future.

The current crisis has already reinforced the lessons learnt from other disaster situations. Our energy crisis has shown how a sectoral failure can undermine the economy and the society that it underpins. In the water sector, we saw how Cape Town's economy was

weakened by the region's failure to maintain its water security, while other metro's have come very close to similar disasters. Sectoral failures create new vulnerabilities – imagine if the drought had coincided with the current epidemic.

The COVID-19 epidemic has also focused attention on the failure of potable water supply systems in many parts of the country. Despite investments in infrastructure that has reached almost 95% of the population, failed water services required emergency action to provide survival level supplies.

On the positive side, the epidemic is demonstrating the importance of collaboration at all levels of society, amongst neighbours at a local level, between different sectors and spheres of government as well as through partnerships involving the public, private and social spheres. It has highlighted the need for all levels of society to work together to ensure that they are more resilient to future shocks.

Building water infrastructure to support jobs and inclusive development

Building on these perspectives, the SAAE has considered what can and should be done in and by the water sector to help South Africa recover from the crisis. In this advisory note, our focus is on sustaining livelihoods and supporting the recovery and growth of a stronger and more inclusive economy.

Targeted action in the water sector can make an important contribution to putting South Africa on the road to recovery. It offers opportunities to build long term resilience and sustainability through partnerships that kickstart economic activity, create jobs and ensure that all of our compatriots can meet their needs for enough safe, accessible and reliable water.

We therefore recommend that part of the post-COVID-19 economic stimulus package should be invested in the systematic strengthening of water systems infrastructure. This will create jobs in construction and support economic activity more widely. Properly designed and implemented, it will catalyse the rejuvenation of the local and national institutions on which we depend for water security, providing permanent, long term benefits for our country.

Recommended Action

First, national government must kick-start stalled strategic water infrastructure investments. To ensure water security to major centres, the much-delayed Lesotho Highlands Water Project Phase 2 (LHWP2) needs to be accelerated to recoup time lost and to end current holdups. The uMkhomazi project is urgently required to supplement the Umgeni system that supplies eThekwini and the surrounding area. While the situation in the Algoa system which supports Nelson Mandela Bay metro is alarming, it can relatively easily be solved through targeted interventions to break through local blockages. Cape Town must continue to implement the interventions already agreed upon.

The water sector also offers other immediate opportunities to create jobs in other sectors. Agricultural development and job creation in Limpopo and the Western Cape would be

significantly spurred by rapid completion of the raising of the Tzaneen and Clanwilliam dams which have been paralysed for some years.

New partnership projects to meet economic and social needs must be supported. These include the refurbishment of the Vaal Gamagara pipeline in the Northern Cape and further phases of the Olifants River Development Project in Limpopo. Private sector partners who want to use the water are prepared to help fund development if they can be assured that moneys will be well spent.

The emphasis must be on the tried and tested user-funded project finance mechanisms used by the Trans-Caledon Tunnel Authority (TCTA) for the LHWP and other projects. The private sector is willing to cooperate in funding as well as ensuring efficient design, implementation and operation and there continues to be significant interest from the international finance community.

At this stage, we recommend caution with proposed 'social' schemes such as the proposed Umzimvubu dam which offer little immediate economic return from the investment. So, in the Eastern Cape, the immediate focus should rather be on other projects that use the Mzimvubu river's waters to unlock rural development opportunities in agriculture and forestry.

There is scope for substantial expansion of forestry, which uses significant quantities of water but does not need large infrastructure investments. Forestry development and management offers opportunities for substantial local participation and industrial development. As elsewhere in the country, productive investments in horticulture can be developed with many smaller investments in upstream areas where water can be captured and led to the fields more easily, quickly and cheaply. In both these activities, there is significant potential for partnership with and financial support from the private sector.

Conclusion

Unless national government takes coordinated action, across all departments and spheres of government, South Africa faces a future of increasing water insecurity and a growing risk of water-related disasters that will have a major impact on the social and economic life of the country in the current decade. The interventions that we propose could help to mitigate those risks and the Fellows of SAAE and our associated institutions stand ready to support government in their implementation.

Further interventions in health promotion, job creation and the development of a new cadre of water managers will be dealt with in future Advisory Notes.

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