Southern African Catholic Bishops' Conference
PARLIAMENTARY LIAISON OFFICE

Briefing Paper 521

June 2021

SA's Underlying Water Infrastructure Challenges

1. Introduction

Water is one of the most basic human needs, yet billions of people around the world remain without access to clean, potable water. It is estimated that about 2.1 billion of the global population do not have clean and safe drinking water, and around 4.5 billion have no access to safely managed sanitation. Consequently, more people die each year, especially children under the age of five, from the scarcity and contamination of water sources.[1] Lack of access to safe drinking water has profound socio-economic implications, particularly for women and girls in less privileged areas and households. For example, research indicates that there is a strong correlation between children's ability to attend school and water accessibility.[2] For many communities in rural and peri-urban settings, water sources are usually far from people's homes and it takes much time and energy to fetch it. In most cases, women and girls bear this responsibility, and are often exposed to attacks by men or wild animals, while being systematically excluded from development opportunities.

2. Climate Change Impacts on Water Resources

Climate change's impact on water resources includes increases in temperatures, shifts in rain patterns and snow cover, and increases in flooding and drought frequency. While recognised as a global phenomenon, climate change will have widely different effects on various regions. For example, South Africa is a relatively dry country with an average annual rainfall of about 460 mm[3]. As a result, it is one of the region's most vulnerable to physical water shortage induced by climate change. Between 2015 and 2019, the country experienced significant water shortages due to delayed and low rainfall, which led to drastic drought conditions in most parts. While the drought is ongoing in some parts, in others there have recently been heavy rains leading to extreme flooding in other parts of the country,[4] causing damage to infrastructure and loss of life in some instances.

Increased flooding due to heavy rainfall events, as experienced in the summer of 2020 in parts of South Africa, can affect groundwater recharge and reduce the availability of potable drinking water, while exposing people's livelihoods and lives to increased risk. People are often hindered from travelling to places of work, and children to schools, as bridges collapse and local rivers overflow. Moreover, even with such heavy rainfall less water may be captured and stored because of the speed and intensity of the rain, causing the water to run-off to the sea rather than to soak into the soil and replenish the groundwater. This further reduces the availability of surface water for drinking and other uses.

3. Water and Sanitation Infrastructure Challenges

Changes in water availability have severe consequences for most sectors of the economy and, conversely, some of these sectors have

profound impact on water resources and availability. Sectors such as agriculture, energy and forestry are among the most demanding water use activities, along with domestic demand. Activities that depend on high water abstraction, such as irrigated agriculture and electricity generation (for the steam turbine processes used in most power plants) also put pressure on our water resources. South Africa's economy is one that is largely centred on these significant economic activities, making it a water consumptive economy.

When it comes to domestic consumption, the government's approach results in citizens bearing the cost of water and sanitation services in an imbalanced way. These services are largely paid for through annual increases that are higher than the inflation rate, and by fines. As a result, people with lower or no financial capabilities are excluded from gaining access to sustainable water and sanitation services. It is important also to note that South Africa's spatial planning, inherited from the apartheid era, remains a huge determining influence on who has access to satisfactory public services, including access to water and sanitation.

Although it is recognized as a human right in South Africa, access to sustainable water and sanitation is still hindered by lack of efficient and consistent policies that take into consideration the facts of increasing urbanization and the population concentration in cities. The free basic sanitation service policy in informal settlements is one example.[5] Many informal settlements have been provided with basic sanitation facilities, mostly in the form of portable toilets. However, access to these facilities remains a challenge due to a lack of personal safety when using them, the poor conditions of these facilities, and their lack of privacy. Additionally, these sanitation facilities usually have no integration of water as a service and are therefore considered unhygienic. There is a general approach that separates the provision of sanitation services from that of water services, especially in rural and informal areas. In addition, available water sources are not equally distributed among different social groups and are often used inefficiently. This can be largely attributed to the limitations of the existing water infrastructure and the maintenance thereof, which varies according to municipal areas and social groups.

Rural people still struggle with the problem of dry taps caused by poor management of bulk water supply at local municipality level; this, despite the policy promise in terms of which households are supposed to receive 6000 litres of potable water a month for free.[6] This is because in some areas water is unavailable not due to a physical shortage, but due to a lack of the necessary infrastructure to get water and sanitation services supplied in households in the first place. This is partly due to the lack of capacity and skills challenges at local municipality level, but some of it is purely due to corruption and mismanagement of funds intended for overall infrastructure development. Leaving citizens to devise their own alternatives, such as drinking untreated water fetched from rivers kilometres away from their homes. Meanwhile, in many areas where taps and bulk water supply were introduced at some point, these have now been left to decay with little or no maintenance.

The country's aging water infrastructure also contributes to physical water scarcity, and should be a priority concern closely linked to water resource management and use. A large part of the water infrastructure is on average 26 years old, as several construction projects were implemented at the start of the democratic dispensation in order to meet major water use needs. The establishment of the Berg River dam in Western Cape to augment the province's water supply; the implementation of the De Hoop Dam to support mining and domestic use in parts of Limpopo; and the Vaal river pipeline for supporting activities at Sasol and Eskom, are some examples.

Apart from these projects there have been few major water infrastructure developments, while both internal and external pressures continue to increase for the sector. Urbanisation and population concentration in South Africa's largest cities, for instance, is an aspect that contributes greatly to the pressures on water and sanitation supply. Moreover our country, like many parts of the world, still struggles to implement efficient water use in its industrial processes, including energy production.

4. Conclusion

Despite significant progress having been made internationally, with reports that about 1.8 billion people globally have gained access to

basic drinking water since 2000[7], there are still vast inequalities in the accessibility, availability and quality of basic water services for various groups of people. Most people in rural areas and informal settlements still lack access to reliable safe water and sanitation services, unlike their wealthier suburban counterparts.

Some of the key barriers that need to be seriously considered include issues of affordability of the services, and access to land resources for planned human settlement in towns and cities. Alternatively, local rural economies could be revived and made inclusive as a way of discouraging rural-urban migration. This would greatly assist the challenge of population concentration in small confined city spaces, where services and infrastructure are put under tremendous pressure to cater for the multitudes.

During his State of the Nation Address in February 2021, President Cyril Ramaphosa announced that the establishment of a 'water resources infrastructure agency' would be accelerated.[8] This agency has been long in the making, and meanwhile the water infrastructure challenges have only become worse. South Africa is well known for its habit of repeatedly establishing institutions and drafting policy documents with overlapping mandates in an attempt to solve its long-existing problems. Thus, there is some concern that the envisaged water agency will be a duplicate of what is already in existence in the water policy arena, and that it will not deal with the problem of implementing the policies – starting with the need to upgrade the skills and management capacities in the public water sector, and to clamp down on corruption and mismanagement.

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[1] https://www.unicef.org/press-releases/21-billion-people-lack-safe-drinking-water-home-more-twice-many-lack-safe-sanitation
[2] http://www.vossfoundation.org/assets/VF-Lifecycle-Final.pdf
[3] https://climateknowledgeportal.worldbank.org/country/south-africa/climate-data-historical
[4] http://floodlist.com/africa/south-africa-floods-january-february-2021
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[8] https://www.dispatchlive.co.za/news/opinion/2021-03-15-why-south-africa-needs-a-new-water-agency/