

# Dirty water: Accounting for pollution control in Zambia

## Findings of the Fair Water Futures programme



### Summary

This brief explores the effectiveness of Zambia's framework for water pollution control, assesses current levels of instructional performance, and gives the following recommendations for improving water pollution control in the country:

- The Government of Zambia increase budget allocations and releases for the Zambia Environmental Management Agency to carry out monitoring and enforcement of effluent discharge licenses.
- The Government of Zambia increase budget allocations and releases for the Water Resources Management Authority (WARMA) to deliver on water quality monitoring and groundwater protection.
- The Zambia Environmental Management Agency (ZEMA) must take measures to ensure accountability to the public in delivering its mandate for pollution control.
- WARMA must finalise and implement groundwater regulations to protect groundwater resources from contamination.
- WARMA, in collaboration with ZEMA and the Zambia Bureau of Standards (ZABS) must develop ambient water standards, establish a monitoring regime, and set water quality objectives for water resources in areas that are highly vulnerable to pollution.

### Introduction

With the release of the Seventh National Development Plan (7NDP), Zambia seeks to mainstream the aspirations of the Sustainable Development Goals (SDGs) into national planning, however, the 7NDP overlooks a pressing priority which is crucial to human health, economic productivity, and healthy ecosystems – controlling water pollution.

It is estimated that lower-middle income countries like Zambia only treat approximately 28% of their municipal and industrial wastewater (WWAP, 2017).

Zambia's surface water bodies, such as the Kafue River, are under significant stress from discharges of industrial waste and sewage, and agricultural run-off of pesticides, fertilizers and sediment (ZEMA, 2012). Meanwhile, strategic groundwater resources, such as the aquifer system underlying Lusaka, are contaminated by on-site sanitation, industrial effluent and solid waste.

The cost of water pollution is high. Water pollution negatively impacts health through the increased disease burden from poor water quality drinking water, degrades the environment through accumulated toxins and nutrient loading and decreased biodiversity, and hurts the economy by reducing productivity and raising the cost of water treatment.

Water quality is also directly linked to water availability, as the pollution of water resources may prohibit certain uses, such as providing safe drinking water. According to the United Nation's World Water Assessment Programme:

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*...the costs of inadequate investment in wastewater management are far greater [than the cost of investment], particularly when the direct and indirect damages to health, socio-economic development and the environment are taken into consideration– WWAP, 2017*

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If Zambia is going to address water pollution and meet Target 6.3 of the SDGs, which seeks to “improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse”, the country will need to reevaluate its approach and invest in pollution control.

### Findings

Through a programme of action research, the Fair Water Futures (FWF) programme has explored the effectiveness of Zambia's framework for water pollution control through the case studies of Chingola,



Lusaka, and Chongwe, where vulnerable communities are severely impacted by contaminated water resources. The team collaborated with community representatives from case study communities to understand their water security challenges, and the relevant laws, policies and responsible institutions. By supporting community representatives to take action by calling on duty bearers to fulfil their institutional mandates and tracking the response, as well as convening with government partners, reviewing existing literature, analysing available resources, and conducting key informant interviews, the Fair Water Futures programme has gathered evidence of institutional performance on water pollution control, gaps in policy implementation and some of the bottlenecks to effective delivery.

### Controlling industrial pollution

Water pollution is strictly prohibited under Section 46 of the Environmental Management Act 2011, and under Section 48 of the Act, the Zambia Environmental Management Agency (ZEMA) is given the mandate to “do all such things as are necessary for the monitoring and control of water pollution”, including:

- Establishing pollution control standards;
- Setting conditions for the discharge of effluent into the environment and issuing and monitoring effluent discharge licenses;
- Monitoring water quality data;
- Carrying out Environmental Impact Assessments for developments that may have an impact on water resources;
- Investigating suspected cases of water pollution.

In practice, ZEMA’s primary focus is regulating effluent discharge from industries. However, ZEMA struggles to fulfil its mandate. While ZEMA has not honoured requests to share information about the number of effluent discharge licenses and the level of monitoring and compliance, it is understood from secondary research and key informant interviews that ZEMA’s resources and capacity to monitor and control pollution are inadequate.

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*The current monitoring can be considered to be ineffective and does not meet the information requirements of the country’s environmental monitoring objectives – Auditor General of Zambia, 2014*

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## Box 1: Chingola’s industrial water pollution crisis

In Chingola, the Kafue River and its tributaries receive highly polluted discharges of effluent from local mining operations, which contaminate the water sources of communities and lead to serious incidents of illness. The ongoing water pollution makes it nearly impossible for the water utility in Chingola, Mulonga Water and Sewerage Company (MWSC), to treat water to meet drinking water quality standards.

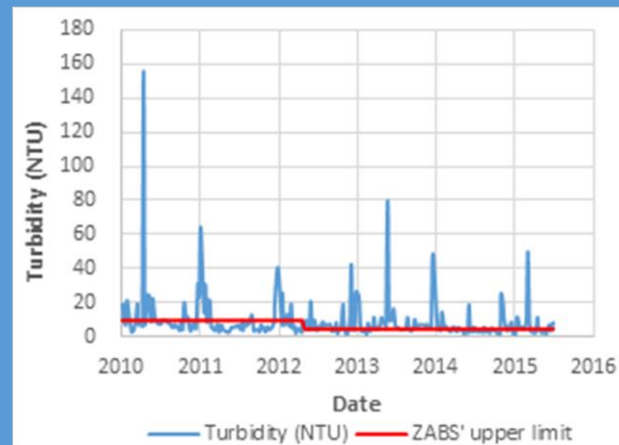


Figure 1: Turbidity of treated water from MWSC Kafue treatment plant (2010-2015)

Mining pollution also causes excessive siltation of rivers and streams, which has a devastating impact on aquatic ecosystems and agriculture.



Siltation of the Mushishima stream

Due to a lack of resources and capacity for monitoring, ZEMA relies on monitoring data submitted by the mining companies themselves, which is unreliable as ZEMA has no means of verifying the data. A 2014 report of the Auditor General found that “mining companies are not complying with the environmental rules, laws, regulations and environmental licensing conditions set by Government” and that the majority of mines were significantly polluting surface and groundwater resources.

## Resources and capacity

Due to a lack of capacity and resources, ZEMA is unable to carry out regular monitoring of effluent discharge license holders. In correspondence from ZEMA, it is noted that “ZEMA’s operations, staff and administration costs are supported through a government grant which has been below institutional budgets. Therefore, all budget releases have been spent in full”. Furthermore, revenue collected by ZEMA through licensing and Environmental Impact Assessment review fees are submitted to the Central Treasury rather than being utilised by the Agency. Figure 1 below provides a breakdown of budget allocations, releases and expenditure of ZEMA from 2014-16.

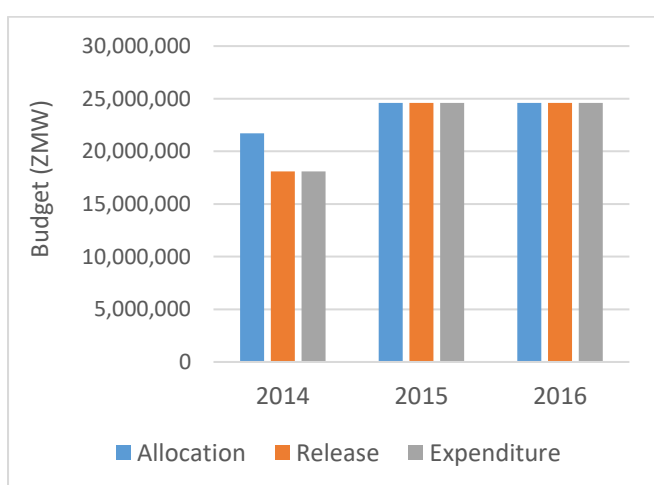


Figure 2: Budget allocations, releases, and expenditure for ZEMA 2014-16 (Ministry of Finance, ZEMA)

## Accountability to the public

Under Section 109 of the Environmental Management Act 109, members of the public may call upon the Director General of ZEMA to investigate an alleged contravention of the Act, to which the Director General is required to respond to within 30 days. Despite invoking Section 109 of the Act in relation to LWSC’s discharge of sewage effluent beyond ZEMA effluent standards in early June 2017, residents of Chongwe have yet to receive a response from ZEMA. This failure to respond reflects a blatant lack of accountability to citizens on controlling water pollution.

*Existing laws and regulations regarding environmental performance are relatively up to date in Zambia; the main problem for the country is that the implementation is not satisfactory – Geological Survey of Sweden (2014: 3)*

## Sewage treatment and groundwater protection

Only 31% of Zambia’s population has access to basic sanitation – 21% use pit latrines, 3% have septic tanks, and 7% are connected to sewer networks (JMP, 2017). While precise figures are not known, the vast majority of sewage in the country is untreated and improperly disposed of. Under the Water Supply and Sanitation Act No 28 of 1997, NWASCO regulates the provision of piped sewerage services, leaving a major gap in the regulation of on-site sanitation. While NWASCO is currently developing a strategy to regulate sanitation, it has yet to be adopted. With the proliferation of on-site sanitation facilities like pit latrines and septic tanks, and the absence of regulation, the country’s groundwater resources are under threat.

### Box 2: Lusaka municipal water pollution

The groundwater resources of Lusaka, which provide more than half of the city’s water supply, are highly vulnerable to contamination from inadequate sewerage provision. It is estimated that only 25% of the city’s faecal waste is properly treated (Figure 3), and only 17% of the population is connected to the Lusaka Water and Sewerage Company sewer network (NWASCO, 2016). Nowhere is this more apparent than in peri-urban areas like George and Kanyama compounds, where up to 95% of inhabitants rely on pit latrines which are a significant source of groundwater pollution and contributor to waterborne diseases such as cholera, typhoid and diarrhoeal diseases (WSUP, 2015).

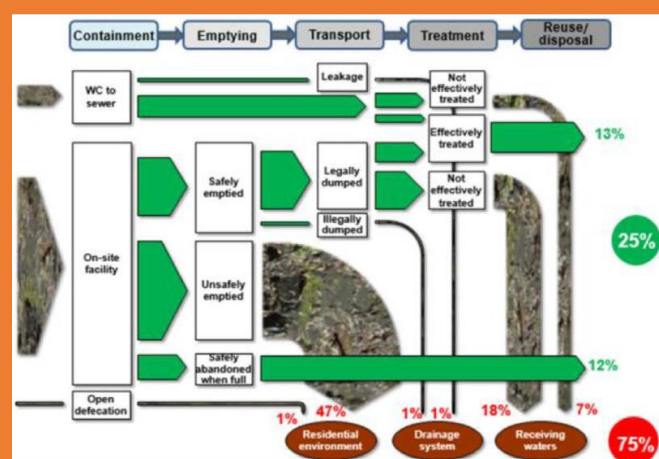


Figure 3: Lusaka faecal waste flows (LuWSI, 2016)

Much of the waste that reaches wastewater treatment facilities in Lusaka is not adequately treated. From 2014-16, LWSC failed to meet the standards for sewage effluent discharges set by ZEMA (NWASCO, 2016). This inadequately treated waste is then discharged to surface water bodies such as the Ngwerere stream, a major tributary of the Chongwe River, which is a source of raw water for the LWSC treatment plant in Chongwe.

Under Section 93(1) of the Water Resources Management Act 2011, the Water Resources Management Authority (WARMA) has been handed the powerful legal mandate and duty to protect the nation's groundwater resources. While groundwater regulations are under development and WARMA has begun mapping commercial boreholes in Lusaka, the Authority has yet to take any measures to protect and regulate the use of groundwater resources, despite being in existence for 5 years.

### Ambient water quality

While Zambia has made some progress in controlling point source water pollution from industry and sewage, the current regulations do not adequately account for the overall contaminate load of water resources, or pollution from diffuse sources such as agriculture runoff of pesticides, fertilizers and sediment.

Under Sections 47-50 of the Water Resources Management Act 2011, WARMA also has the mandate for monitoring water quality and controlling pollution, including responsibilities to:

- Develop and maintain ambient water quality standards with ZEMA and the Zambia Bureau of Standards (ZABS);
- Monitor the quality and control pollution of any water resource in collaboration with ZEMA; and
- Establish quality objectives for any water resource.

While WARMA has indicated that ambient water quality standards are under development, the Authority has yet to take any tangible action ensure good ambient water quality.

### Resources and capacity

For the last three years (2015-17) WARMA has been allocated an operational grant of ZMW 15,033,847, which to date has been granted in full (WARMA, personal communication). While this budget does not reflect the significant support that WARMA receives from donors, it is nonetheless insufficient for the Authority to carry out its many important duties to ensure good water quality and protection from pollution.

### For a fair water future...

The creation of the new Ministry of Water Development, Sanitation and Environmental

Protection offers an opportunity for enhanced coordination and accountability between WARMA and ZEMA to deliver on their mandates for water pollution control. To seize this opportunity and improve protection of Zambia's water resources, it is recommended that:

- The Government of Zambia increase budget allocations and releases for the Zambia Environmental Management Agency to carry out monitoring and enforcement of effluent discharge licenses.
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## References

- Geological Survey of Sweden. 2014. *Environmental Impacts of Mining in Zambia: Towards better environmental management and sustainable exploitation of mineral resources*.
- GRZ. 2017. *Seventh National Development Plan 2017-2021*. Ministry of National Development Planning. Lusaka.
- GRZ. 2017. *Estimates of Revenue and Expenditure 2017*. Ministry of Finance. Lusaka.
- GRZ. 2016. *Estimates of Revenue and Expenditure 2016*. Ministry of Finance. Lusaka.
- GRZ. 2015. *Estimates of Revenue and Expenditure 2015*. Ministry of Finance. Lusaka.
- GRZ. 2014. *Estimates of Revenue and Expenditure 2014*. Ministry of Finance. Lusaka.
- GRZ. 2014. *Report of the Auditor General on the Management of Environmental Degradation Caused by Mining Activities in Zambia*. Office of the Auditor General
- GRZ. 2011. *The Water Resources Management Act 2011*. Act of Parliament.
- GRZ. 2011. *The Environmental Management Act 2011*. Act of Parliament.



GRZ. 2011. *The Water Supply and Sanitation of 1997*. Act of Parliament.

Joint Monitoring Programme. 2017. *Progress on Drinking Water, Sanitation and Hygiene: 2017 Update and SDG Baselines*. Geneva. World Health Organization (WHO) and the United Nations Children's Fund (UNICEF).

Lusaka Water Security Initiative. (2016). *Lusaka's Water Security Situation Analysis Book 1: Water risks and solutions assessment*.

National Water Supply and Sanitation Council. 2016. *Urban and Peri-Urban Water Supply and Sanitation Sector Report 2016*.

National Water Supply and Sanitation Council. 2015. *Urban and Peri-Urban Water Supply and Sanitation Sector Report 2015*.

National Water Supply and Sanitation Council. 2014. *Urban and Peri-Urban Water Supply and Sanitation Sector Report 2014*.

WWAP (United Nations World Water Assessment Programme). 2017. *The United Nations World Water Development Report 2017. Wastewater: The Untapped Resource*. Paris. UNESCO.

United Nations. 2016. *The 2030 Agenda for Sustainable Development: Recharging Multilateral Cooperation for the Post-2015 Era*.

Water and Sanitation for the Urban Poor. 2015. Topic Brief: *Introducing safe FSM services in low-income urban areas: lessons from Lusaka*.

World Bank – Zambia Data. 2017. Accessed at: <http://data.worldbank.org/country/zambia>

Zambia Environmental Management Agency. 2012. *A Report on the Kafue River Surface Water and Sediments Sampling Campaign – November – December 2011*.