BRIEF

Health Impact Assessment of the 2024 Zambia Minerals Regulation Commission Act[1]

August 2025

Key Messages

This Health Impact Assessment (HIA) examined Zambia's Minerals Regulation Commission Act No. 14 of 2024. The Act has been enacted and assented to on 20th December, 2024, but is not yet in force, and awaits a statutory commencement order and regulations. The HIA examined the Act through the lens of specific health impacts of mining activities on the Copperbelt Province, drawing evidence from Kankoyo Township in Mufurila District. By examining potential health impacts, the HIA identifies options to maximize health benefits and prevent health risks in the new law.

The projected health impacts identified in the HIA outlined in this brief raised recommendations for regulations under and for operationalising the Act. They included recommendations for the Ministry of Mines and Community development to:

- Strengthen health and safety conditions in mining by mandating ventilation standards, personal protective equipment (PPE), ergonomic monitoring, and routine health checks.
- Prevent mine-related air and water pollution by enforcing emission thresholds with real-time monitoring.
- Legally bind developers to replace lost infrastructure and services such as health and education for displaced communities, where mining results in unavoidable displacement.

The Ministry of Health was also recommended to ensure that health is embedded in local development plans through its own institutional mechanisms and community engagement.

The policy context

Mining plays a key role in Zambia's economy. The Minerals Regulation Commission Act No. 14 of 2024 aims to update the regulation of the sector. The Act has not yet come into force, awaiting a statutory commencement order by the Minister of Mines and Minerals Development. This opens a window of opportunity for an HIA to inform its implementation, together with forthcoming regulations and Commission guidelines. An HIA identifies potential positive and negative health impacts to integrate health into policy and planning, maximising benefits, preventing costly health risks and protecting vulnerable people. This HIA thus aimed to identify health issues to consider in implementing the Act, preparing regulations and possible amendments for it aimed at decision-makers in the Ministries of: Health; Mines and Minerals Development; Community Development; Green Economy and Environment; in the Zambia Environmental management agency and for workers and employers in the mining sector.

Sulphur dioxide emissions. Zambia, Source: Future Preneurs, 2025

[1] This policy brief was produced by Marja Hinfelaar, Derrick Bwalya and Milanzi Moyo of the Southern African Institute for Policy and Research (SAIPAR) and Benedict Matongo, Ministry of Health Lukulu District Health Office, Zambia, with review by Dr Carlos Dora, technical input from Dr Rene Loewenson, Training and Research Support Centre (TARSC) in EQUINET and copy edit by V Kernohan. It was sponsored, in part, by the *African Extractivism and the Green Transition* (AEGT) research partnership and by TARSC in the Regional Network for Equity in Health in East and Southern Africa (EQUINET. www.equinetafrica.org).

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The Health Impact Assessment

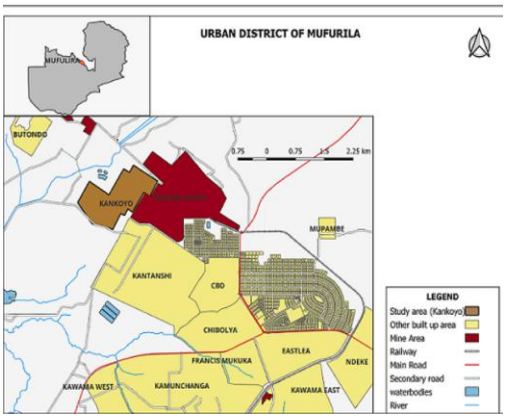
The Zambia Minerals Regulation Commission Act, 2024 regulates and monitors the development and management of mineral resources in Zambia. It repeals and replaces the Mines and Minerals Development Act, 2015; establishes and sets the functions of the Minerals Regulation Commission; and establishes the Mining Appeals Tribunal. With the new Act not yet in force a prospective HIA assessed the impacts of the Act on the health of mineworkers and communities.

The HIA was implemented during an EQUINET regional training programme. It used an internationally recognised five-stage method: screening to identify feasibility, the causal pathways and focus of the HIA; scoping to identify the sources and forms of evidence; a profiling and assessment stage to identify the direction, magnitude, severity, likelihood and on this basis the significance of the health impacts assessed; and the setting of recommendations for significant impacts; and steps to report and communicate the HIA and propose areas for monitoring impacts and of implementation of the recommendations.

From the screening and scoping stages, the HIA focused on four aspects of health in relation to the Act:

a. Health and Safety Standards for mine workers and nearby communities;
b. Environmental health protections affecting communities; including for air, water, and soil;
c. Health where community displacement takes place, particularly in health services and infrastructures;
d. Integration of health in local development and governance.

As a desk-based assessment, the HIA used relevant national and international laws/standards, public health and environmental data and case study evidence from Kankoyo Township in Mufulira District, a Copperbelt community heavily impacted by mining pollution.

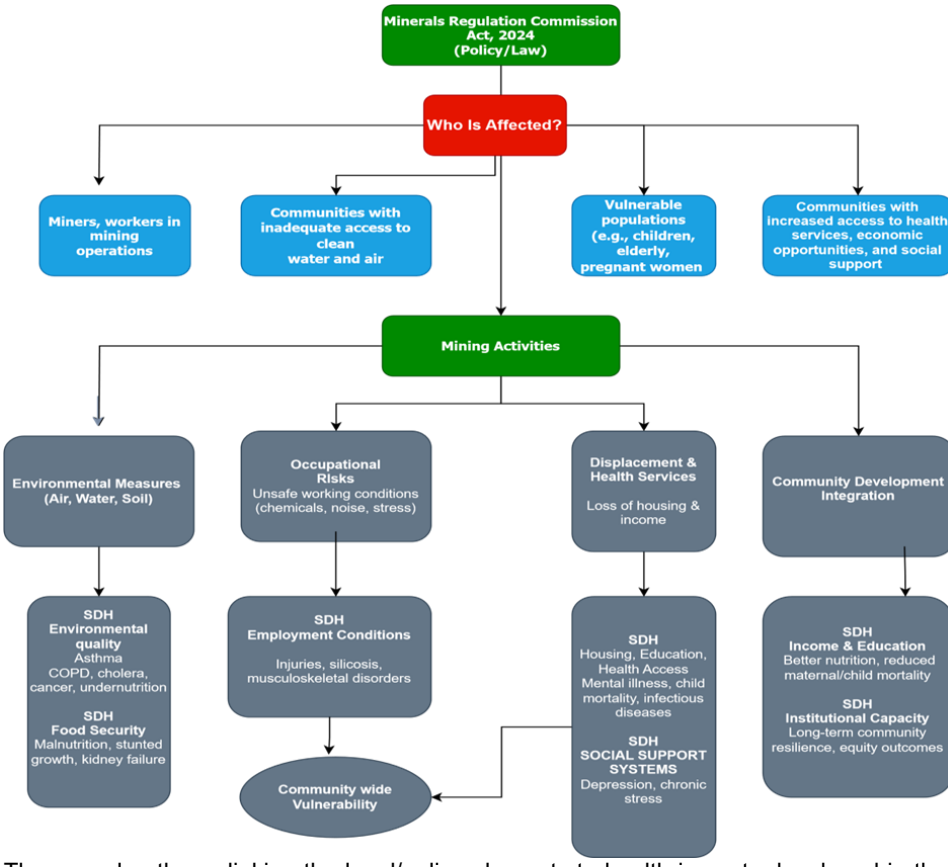


Mufurila townships and the location of Mopani Mines. Source: Muma et al, 2020

While the HIA faced a limitation in available data in key areas, the combination of local and international evidence gives reasonable confidence in the findings.

A causal pathway (shown adjacent) was developed that linked the four key elements assessed with the social determinants of health (SDH) as the factors affecting health and their routes of exposure; and the health outcomes. The causal links were derived from national and international evidence. The causal pathway informed the HIA analysis.

The profiling and assessment stage explored the potential impact of or deficits in the proposed Act on the SDH and health outcomes for the four key areas assessed.



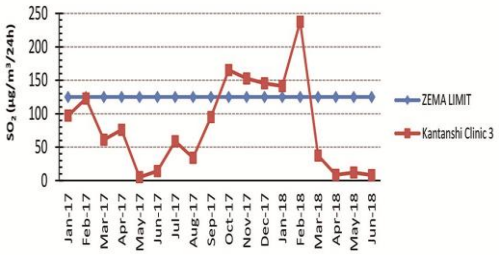
The causal pathway linking the legal/policy elements to health impacts developed in the HIA

Findings of the HIA on health impacts

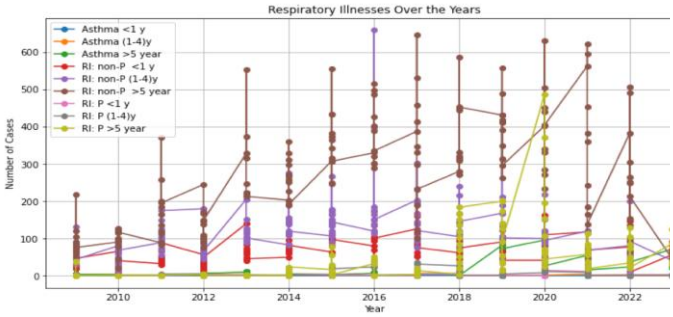
The HIA pointed to health impacts for the pathways in each of the four areas assessed.

Firstly, in relation to **health and safety standards for mine workers and nearby communities:** Mine conditions remain poor, with frequent accidents, exposure to dust and chemicals, and inadequate protective measures. Over half of Zambia's mining workforce is exposed to unsafe dust and noise levels, while accidents from falling rocks, equipment failures, and traffic collisions remain common. While health and safety is broadly recognised in the Act, for young workers, education and training deficits can hinder their ability to understand and comply with safety regulations, increasing accident risks. Inadequate requirements for engineering controls, such as ventilation, increase exposure to chemicals, dust, biological agents, and noise, with consequences, such as respiratory illnesses, musculoskeletal disorders, and mental ill-health.

Secondly, in relation to **environmental health, including air, water, and soil:** Air pollution from sulphur dioxide emissions in Kankoyo Township regularly exceeds WHO safe limits, contributing to high rates of asthma, bronchitis, and premature mortality (see adjacent diagrams). Water pollution from mining effluent, including heavy metals and sulphates, contaminates drinking water and increases the risks of diarrhoeal disease, cancers, and heavy metal poisoning. Acidic rain due to sulphur dioxide has accelerated the decay of roofing materials, and paint and plaster on houses. Soils contaminated by acid and heavy metals have reduced agricultural productivity and food security, posing also a risk of chronic malnutrition, particularly for children. The distribution of these risks varies, depending on the location of the community, with those residing near the mines being most affected. Those vulnerable include children and immunocompromised individuals, those already facing risks, such as from using untreated surface water, and future generations where contaminants affect pregnant women and pose risks to foetal development.



Monthly average SO2 levels in the Kantanshi clinic 3 area, 2017 and 2018. Sources: Muma at al, 2020; Chihana et al, 2024



Respiratory illnesses and sulphur dioxide levels in Kanyoko, 2009-2023 Source: Chihana et al, 2024

Thirdly, **displacement of communities by mining activities and deficits in access to health services and infrastructures** exacerbates existing vulnerabilities. Section 37(3) of the Act allows relocation of communities by agreement, but is vague on service continuity. Mine-displaced communities lose access to clinics, schools, clean water and sanitation, unless provision of these services is made mandatory, with the highest impact on women, children, and the elderly due to their greater health needs. For example, a 2019 UNICEF and Ministry of Education assessment in the Copperbelt found that school enrolment dropped by over a third in resettled areas, with higher levels of child illness where caregivers had low education.

Finally **in relation to integration of health in local development and governance,** the Act contains broad enabling provisions in Section 4(e) and (f), which call for equitable access to mineral resources and promotion of development in mining-affected communities. However, it does not set mandatory guidelines on duties to integrate community roles in governance, leaving this dependant on future secondary regulations. The Act prioritizes revenue and regulatory oversight of mining operations, but lacks provisions for systematic HIAs or community benefit-sharing, leaving affected populations excluded from decisions that impact their wellbeing.

Recommendations from the HIA

Based on the findings, various actions are recommended to improve the integration of health in the operation or regulations of the 2024 Zambia Minerals Regulation Commission Act, identifying responsible authorities and institutions for their implementation. High and medium priority actions are recommended to integrate health into the operations of the Act, summarised below.

Mining companies and the Ministries of: Health and of Mines and Minerals Development to:

a. Set and implement mining and processing controls in operations to minimize sulphur dioxide emissions through best practice protocols; implement dust suppression systems to reduce particulate matter; improve ventilation systems in enclosed workspaces; ensure regular equipment maintenance to prevent excessive dust generation and ensure the provision and use of personal protective equipment for workers, along with periodic training programmes.
b. Provide comprehensive occupational health programs, including health monitoring, training, and early detection of mine-related health problems, such as respiratory or hearing problems.

Mining companies, the Zambia Environmental Management Agency (ZEMA), water and wastewater/sewerage companies to:

a. Install emission controls; train workers and contractors; ensure compliance with national water pollution standards and regularly monitor water quality.
b. Install and publish data from real-time environmental monitoring (e.g. air-quality sensors).
c. Develop and implement robust waste management systems to prevent leachate/runoff and implement remedial actions where breaches occur.

Mining companies, local councils, health and regulatory authorities to:

a. Map, set and implement duties to address health, education and social service gaps and infrastructure deficits prior to displacement by mining activities and develop culturally sensitive resettlement plans co-created with affected communities.
b. Develop comprehensive resettlement planning aligned with local community needs, including for mental health and social support and livelihood restoration programmes.
c. Develop community-led initiatives and economic and local development projects and plans that integrate health, education, and livelihood programmes and that ensure equitable benefit.

In terms of legal provisions and subsidiary regulations, the HIA recommends:

a. Explicitly requiring air quality and dust emission controls for communities around mining sites.
b. Mandating periodic air quality audits and reporting by mine companies, including for licensing.
c. Mandating air, water, and soil monitoring by ZEMA with public access to data.
d. Explicitly address soil contamination prevention, monitoring, and remediation in mining zones.
e. Requiring HIAs and community displacement plans before mining licences are granted.
f. Mandating community benefit-sharing agreements, ensuring their links with health, education and income generation, as well as public monitoring of and reporting on local health indicators.

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