

## **Sustainability in mining seminar**

Against the backdrop of a contracting mining sector – production was down 9,9% in the first quarter of 2018 – and the imminent release of a contentious mining charter, the mining seminar was well poised to discuss the following:

“Why the social contract between mining and society is broken and how to fix it”: John Capel, Executive Director of the Bench Marks Foundation, spoke of the following:

There are winners and losers in mining and in fact, mines and communities face key challenges:

- Unlevel playing field seriously disadvantaging communities
- Access to specialised expertise and advice and information
- Ability to organise, arrange meetings, mandates and do surveys and make informed decisions.

### **What we need:**

Open up democratic space by:

- Equalising playing field by addressing power dynamics and capacitating communities to address issues
- Having ways to resolve conflicts between the mines and communities and access to justice.

### **Levelling the playing fields**

- Requires access to expertise and advice for communities
- Communities ability to organise and educate themselves.

Then, David van Wyk, Mining Analyst, spoke about regulating the zama-zamas (unregulated artisanal miners). David introduced the subject by providing some context: Although they are considered illegal miners, they do contribute to the economy. Let us assume that for the 30 000 artisanal miners, there is a dependency ratio of 1:8. This means that 250 000 people survive on the work of artisanal miners for housing, school fees, food and clothes. Van Wyk further noted that the environmental impact of artisanal miners was minimal, stressing that they used little water and produced negligent waste. “With proper training and management their operations can be made much safer and [the use of] mercury can be phased out.” He added that artisanal miners were entrepreneurs and that their operations could be classified as survivalist and micro.

“We need to begin to make a transition from large-scale industrial mining to small-scale mining that is orderly, sensible and safe.” To achieve this, he noted that it was key to organise artisanal miners into legal business entities, such as cooperatives, and provide them with the required training. “It is possible, given the will and commitment of government, to formalise and legitimise artisanal, survivalist mining,” he said.

Mr Motia from Ncamiso Mining addressed the audience about mining’s service to community. He described the 270 tailings facilities that exist in the Johannesburg area which make up 124 square miles of radioactive waste making up roughly 6 billion metric tonnes. There are around 1.6 million people living in formal or informal settlements near mine dumps in Johannesburg alone. Local community members are deprived of safe housing and liveable areas, clean water, clean air, and clean soil; not to mention the fact that they are subject to disease and illness due to pollution and constant exposure. Ncamiso Mining bridges the gap and restores the balance that has been left by mining in the past. It works to remove those facilities, which has an extended societal, environmental and economic benefit. The removal

of the tailings facilities are done in 3 phases: 1. Removal of the any radioactive and contaminated waste; 2. clean and clear the site and 3, screening fines from the residue tailings.

Dr Lorren Haywood (CSIR), in her presentation entitled, **Legislative challenges hindering mine waste entering the circular economy in South Africa**, introduced the topic with some startling statistics: metal and mining waste is estimated to be at approximately 1.5 billion tonnes, globally, which is equivalent to 85 000 km<sup>2</sup> at a depth of 2m! Mining and minerals waste, in South Africa, takes up approximately 87.7% of the waste stream while domestic waste is at 1.5%. Dr Haywood noted that for the mining and mine processing part of the value chain, not much reuse occurs. In fact, the waste hierarchy does not seem to be exercised in mining waste. A major sticking point for this is that policy is not enabling a cradle-to-cradle approach to mining waste. In fact, the National Environmental Waste Management Act (NEMWA) of 2008 exempted mine related waste from the waste classification system and so it wasn't until NEMWA was amended in 2014 that it included mine residue stockpiles and deposits as forms of waste. Dr Haywood closed the presentation with the following:

- Residue to be defined as a resource – would enable it to be used as a by-product
- Change focus from cradle-to-grave to cradle-to- cradle: integrated waste management to be a focus.

In his presentation entitled, **“Managing mine water: Learning from the past”**, Dr Henk Coetzee, for the Council of Geosciences, introduced his audience to the fascinating topic of learning mining lessons from the past. His take home message was that **“In our quest for innovative solutions, it’s easy to forget what has been done in the past.”** Using specific case studies littered with old maps, newspaper cuttings and journal entries, Dr Coetzee showed us how the past can help us understand mining problems, establish baselines, and help us solve mining challenges.

Obed Novhe of the Council of Geosciences presented a topic entitled, **“Passive treatment technology for remediation of polluted mine water”**. Mr Novhe introduced the topic with context and then explained that the following are good reasons for passive treatment:

- **Water treatment technology which utilizes natural available energy sources**
- **Technology of choice for long term management of polluted mine water**
- **Low cost**
- **Efficient in metals removal**
- **Potential to recover valuable products that can offset the cost of maintenance.**

Using a variety of case studies, he concluded that passive treatment can be used for long-term remediation of AMD; that an accumulation of metals offers an opportunity for resource recovery; and that this intervention is based on complex water chemistry.

The last presentation of the day was given by Dr William Stafford of the CSIR who presented in the stead of Dr Willem de Lange. Dr Stafford presented on **Mining at the crossroads: Sectoral diversification to ensure sustainability?** William painted a rather bleak picture of mining and then asked the audience how we can successfully exit mining. He then began to introduce the concept of the mining-agricultural nexus, which instead of creating a competition for resources may well be able to create a space for co-operation. The work that the CSIR has identified is the following:

- The extent to which mining liabilities could be turned into agricultural assets and be used as a way to improve relationships between mining and agriculture to hopefully engage/solve South Africa’s mining legacy problem.

- However, it was realised that a far more fundamental institutional change in the Mining Industry is required to diversify Mining companies to agriculture through **sectoral integration within the same company**.