

Sustainable mining: From a grassroot perspective

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The Brundtland Commission (1987) defined “sustainability as the ability for the current generation to meet their own needs without compromising the ability of the future generations to do the same” [1]. The discussion around sustainability of finite resources has to be had with all stakeholders, and with a sense of urgency. There has been a significant integration of the world and society at large, therefore any scarcity of critical and strategic resources has a larger impact on our lives than ever before.

The mining industry contributes approximately 10.1% to Namibia’s GDP which amounts to over 30 billion Namibian dollars in profit [2]. In the global context our mining industry is small but more importantly, especially in a post-Covid-19 environment, we have learned that the mining industry is fragile. Whether it will be the next worldwide pandemic; a war that breaks out or just a downturn in the economy, it is imperative that those who lead within the mining industry work to ensure its resilience. This would involve embracing the social, environmental and economic aspects that allow future generations to benefit from mineral resources (Figure 1).

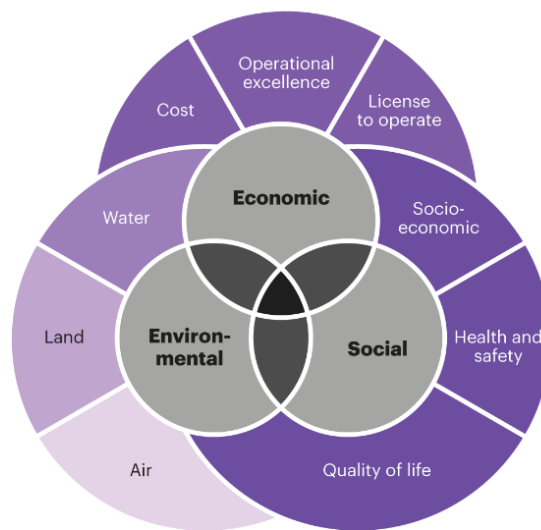


Figure 1. Economic, environmental and social benefits of sustainability (adapted from A.T. Kearney analysis, 2022 [4]).

METHODOLOGY

Sustainable mining has been a catch-phrase for many years with the focus being on the impact that mining companies may have, through their operations, on the environment, community, human resources and on human health.

The numerous studies conducted to assess the effect of corporate social responsibility of mining companies on the communities in which they operate have been used to guide legislature and high-level decision-making [3]. These sustainability initiatives are built up by national policies, laws and regulations and implementation, and can be monitored by national bodies such as the Namibian Ministry of Mines and Energy, Chamber of Mines Namibia and other professional bodies in Namibia and Southern Africa.

Although the mining industry creates jobs, an increase in mechanisation and reduced labour requirements means that mining companies no longer drive development of communities in the same way that they used to in the early 1900s. To ensure that future communities can still reap the benefits of today's mining activities, there needs to be assessment of how the ethos of sustainable mining can be implemented throughout the mining value chain. How and where can both technical and non-technical personnel integrate this into their work?

RESULTS

The key observations of the paper highlight how from surveying and interviewing employees at numerous mines we assess how the mindset of sustainability and resilience has been deployed in the mining environment, looking at the variation in exposure, experience and work environment.

Mining companies that show a commitment to sustainability have been known to employ rigorous safety policies and procedures around the workplace. This includes starting each day with sharing of near-misses and incidents as well as the remedial action instituted, which eventually leads to a safety-first mindset.

Identifying cost-saving initiatives and rewarding those who innovate within the company has also been shown to lead to efficient and sustainable methods being used for labour intensive tasks. An example of this would be the use of photogrammetry by the mine's survey, geology and geotechnical departments as a means of data collection and slope monitoring. The use of this technology saves time by reducing the amount of time spent in the field and improves safety, as there is less chance of an incident involving ground instability. It was observed that sustainability begins with changing the behaviour towards life of mine, starting with brownfields exploration as well as greenfield exploration where possible.

CONCLUSION

Long term sustainability in the industry can be achieved with consistent improvement in the mining and extraction processes as well as essential project management of all business improvement initiatives. This has been shown to aid in overall longevity of mining operations. There is no one-size fits all solution to ensuring that the mining life cycle of a single mine is extended but there are themes that when viewed subjectively show us how we as the human resource can work toward sustainable mines.

The end goal for any company is to generate profits responsibly for as long as possible by keeping costs minimal while increasing revenue. A mining company has only a finite resource - if it is to be sustainably mined it will require aspects of safety, environmental and community to be integrated together in order to attain the goal of sustainability.



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Victoria Upindi is currently a rock engineer at Trevalli RPZC Mine. She has completed her MSc. in Civil Engineering looking at integrating slope monitoring data with empirical modelling data. She has 6 years of experience in mining which includes grade control, geometallurgical projects and geotechnical engineering. She has completed numerous projects that deal with optimization of mining operations and business improvement. Her current focus is on optimizing groundwater monitoring, with a focus on groundmass safety and water-use efficiency.

