

Can waste-to-energy offer an OPEX reprieve for mines?

 By Jason McNeil

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Despite the large impact mines have on the environment, mining is a significant contributor to the local economy from both a financial and employment perspective - with an estimated worth of R20.3tn - and will therefore continue to play a critical role in the country's future.



Jason McNeil, chief operating officer, Interwaste

However, mounting regulatory and socioeconomic pressures are driving a shift in the sector towards more sustainable and circular economy-based business models. Linked to this, as market leaders reflected on stable access to and pricing of power as a key business challenge during the recent Investing in African Mining Indaba, incorporating integrated waste management strategies at an operational level bodes impressive potential gains for mines.

The South African mining sector is heavily regulated with compliance centred on receiving, converting and retaining all mining rights. To ensure mines continue to meet their legal obligations, compliance is monitored by two board-mandated entities namely, the Sustainability, Risk and Compliance Committee as well as the Social and Ethics Committee. Therefore, running mining operations with approved Environmental Management Plans (EMPs) is fundamental to sustainability and legal compliance.

Zero waste to landfills targets

Linked to this, the Polokwane Declaration sets targets of zero waste to landfills by 2022 - although the set target of zero waste to landfill was revised to ensure 70% of waste is diverted from landfills by 2022. What is encouraging to see is that the zero waste to landfill goal has been adopted by mining giants - with vested interests and operations locally - in support of their existing commitments to development and they have also ensured compliance with the regulatory framework, i.e. National Environmental Management Act (NEMA, Act 107 of 1998) and the Waste Act, 2008 (Act 59 of 2008).

Given this ongoing commitment, it would actually eventually lead to eliminating unnecessary wastage and waste generation, which we know traditionally ends up at a landfill. Of course, more will be needed if we want to make a real impact. Therefore, taking a long-term view to optimising resource efficiency through innovations like sustainable product designs, recovery, reuse and recycling of products, or energy production through the systematic application of the waste hierarchy still needs to be a priority.

Strategic partnerships

The push towards zero waste to landfill by mining companies has also seen strategic partnerships being formed with integrated waste management companies, like ourselves, and there are already a number of successful interventions and initiatives underway. As a company we are constantly examining ways in which to innovate and design practical solutions that support our clients' zero waste to landfill goal - which then poses the question of, how best can we reuse what waste remains, in order to offer further sustainability, and possible economic gains?

In terms of micro grid power generation, based on the success of existing proactive waste management interventions and initiatives, the amount of suitable waste generated by the average mine in South Africa would not be sufficient on its own to justify the development of a waste-to-energy plant localised to a specific mine site. However, Interwaste has identified two

possible structures that can be investigated in the South African, and African environments:

1. Waste derived fuel

This involves a process of blending suitable hazardous waste, such as hydrocarbon and chemical hazardous waste into an alternative fuel source, which can then be combusted through co-processing. Waste derived fuel is a suitable alternative to diesel that can, for instance, be used to power furnaces and/or other heat treatment processing applications. In addition to being a lower carbon fuel source, it can also offset the reliance on diesel – which can present operational risks related to reliable availability-supply and price, due to fluctuations in global markets.

2. Pooling non-recyclable waste for a micro generation power project

While one mine alone may not produce sufficient quantities of suitable waste to make the business case for developing a waste-to-energy power project, there is perhaps great opportunity for a collective of mines - and downstream, or other industrial businesses within a specific geographical area of operation, to potentially pool their suitable non-recyclable/recoverable wastes to such an end.

The business case of any such venture will still be very dependent on the available volumes of suitable waste to sustain production and power outputs. This model of project is perhaps more feasible for those mines that are significantly remote - even cross-border - and with little access to conventional waste removal support services.

Additionally, mines with associated staff villages may stand to benefit from exploring potential biogas projects from human waste and other biodegradable food wastes. Though, again, the viability and tangible benefits would depend on the volume of waste actually generated, and whether or not one could identify a bona fide use for the biogas generated.

Mining houses looking at reducing costs associated to waste management - and to leverage on the waste value and economies of scale from the waste produced through their operations - should look at a strategic partnership with a company that can offer a holistic approach. However, for a partnership to truly work it must offer a centralised view of all elements of waste management and enable a mining company to reduce its environmental impact and costs – which can only bode well and deliver economic benefits – all while enhancing governance, compliance and responsible business processes.

ABOUT JASON MCNEIL

Jason McNeil is chief operating officer at Interwaste. He has been in the waste management industry for 20 years and has, over this time, been involved in the strategic and day-to-day operational, technical, marketing and sales-related functions within the business. He also has extensive international exposure regarding best industry practice when it comes to waste management - as a result of his position at Interwaste.

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