

COAL BED METHANE MINING – IS SOUTH AFRICA LAGGING BEHIND?

By Mpai Motloung

South Africa has historically depended on coal as an energy resource. This was due to the vast available coal resources and the relative ease of coal mining in the past. However, the situation has changed in recent times due to increases in the demand for electricity and large coal resources that are relatively challenging to mine. In addition, coal burning has been associated with the creation of greenhouse gases by environmentalists. It is important that South Africa finds alternative energy sources.

Coal Bed Methane (CBM) offers an alternative to using coal as an energy resource. CBM is methane gas that has been trapped in coal seams, and can be extracted by removing the water within the coal seam, thereby liberating the methane gas. The gas that emanates from the coal seam usually comprises more than 96% CH₄, with the remainder consisting of predominantly helium gas. CBM has been mined for decades in the Western World, but mainly in the US, where most of the technology has been developed.

Although insufficient research has been carried out with respect to specific geological setting for CBM, it is widely accepted that it occurs in deep seated coal seams (>200m). Although coal quality specifications have not yet been determined, it seems any quality of coal yield coal bed methane, with higher grade coal yielding close to pure methane gas. CBM is also prevalent in traps that occur near the contact of coal with dolerite intrusions. CBM is also known to occur in traps associated with conventional gas. This presents opportunities for previously uneconomic deposits that are either too deep or situated in proximity to a dolerite dyke.

South Africa is lagging behind on CBM resource mapping. Resources of CBM have not been quantified within the vast Karoo Coal Fields, which have fuelled South Africa's energy demands for a century.

Current legislation does not describe or include CBM mining. CBM mining effectively sterilises the coal resource, and proper legislation has not been developed to tackle this issue. Guidelines for reporting and resource estimation for CBM have not been developed. Environmental regulations specific to CBM have also not been established. In addition, there are insufficient CBM-powered generating stations to reduce the current gap in electricity demand.

However, CBM is still an option for future power generation and should not be overlooked. The best South African coalfields for likelihood of CBM exploration are the Freestate, KZN, Soutpansberg and Waterberg coalfields, due to relatively deep coal occurrences and erratic intrusions of dolerite. Some research is currently on-going, but the success of CBM as a source for energy generation requires a lot more commitment from industry and regulators. Should you have any queries with regard to CBM please contact Mpai Motloung.