

ABSTRACT

Coal is one of the most abundant mineral resources in South Africa and it is predominantly used in electricity generation in the country. Of all the mineral resources in South Africa, development of coal resources attracted most of the financial investment between 2010 and 2013. Development of mining projects requires estimation of capital and operating costs in the early stages of the project's life. Estimation of costs is an essential exercise that assists on deciding the future of mining projects.

Despite all the investment in the South African coal mining sector, there is still little consistency in unit capital costs invested/required to develop coal mining projects. Lack of research within the area of coal mining projects' costs is attributable to a lack of publicly available information. Research in this area will enable investors and operators in the coal mining sector to be able to assess financial viability early in the project life.

This study reviewed coal mining projects across the world, looking at publicly available capital costs. The study further recognised similarities between the South African and Indian coal mining sectors thereby enabling the research to leverage data from the Indian coal mining sector to estimate capital costs in South Africa. The parametric estimating technique was used to estimate capital costs in this study.

Finally, six formulae were initially developed to estimate the capital costs of establishing coal operations in South Africa. The six formulae were then reduced to three formulae by eliminating outliers. The formulae can be used to estimate capital costs to an error of magnitude error level of -30% to +50%. An estimation formula for underground longwall operation was not developed due to an insufficient number of underground longwall operations in both South Africa and India. In conclusion, this study recommends further research to develop more formulae which can be used to estimate capital costs more accurately.