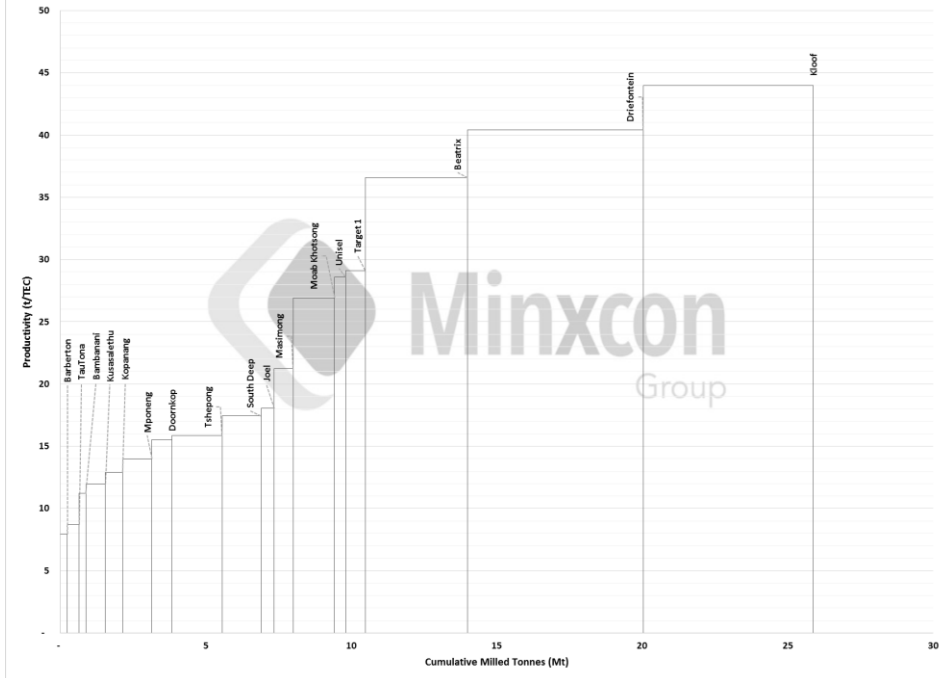


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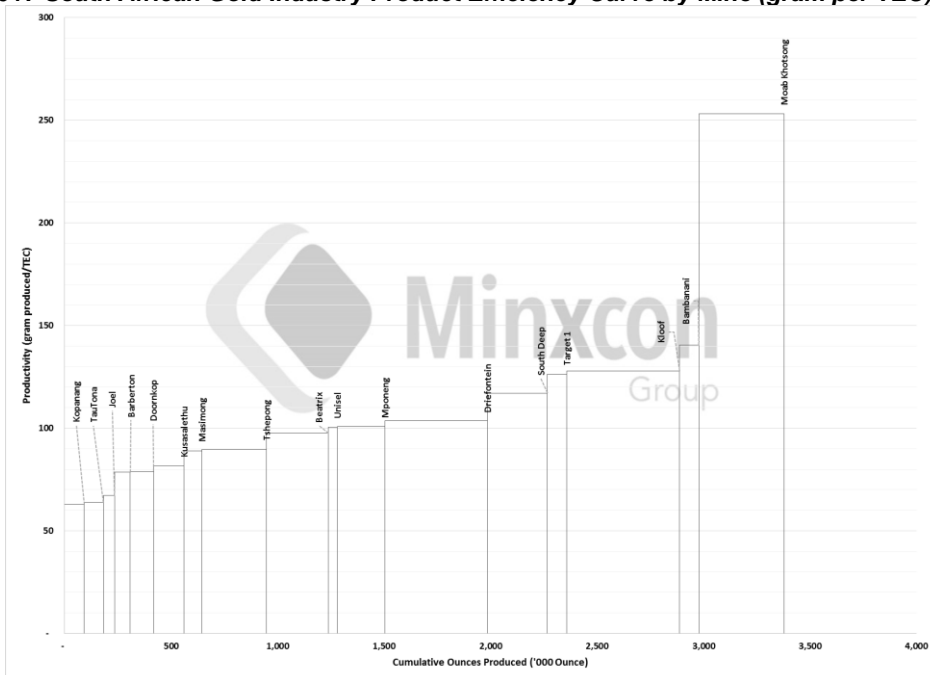
Mining Productivity

Productivity influences the organisational performance of mining companies

2017 South African Gold Industry Tonnage Efficiency Curve by Mine (tonne per TEC)



2017 South African Gold Industry Product Efficiency Curve by Mine (gram per TEC)



Disclaimer: Information displayed in graph is based on public information collected from the latest respective South African gold mining company's annual reports. There is no guarantee that the interpreted information is 100% accurate.

NEWSLETTER SPOTLIGHT

Globally mining companies are facing severe economic challenges. These global challenges also influence the South African mining industry and with additional operational challenges that are unique to the country, the survival and competitiveness of the industry is threatened. This forces the South African mining industry to focus on factors that influence their organisational performance: productivity is one of these focus areas.

Productivity can be measured by comparing the relationship of output and inputs used to produce the product. It remains a relative concept and it cannot be said to increase or decrease unless a comparison is made against a standard or a competitor.

Industry productivity curves are valuable tools to benchmark the operational performance of an existing operation or a new proposed mine project against the current industry performances. The productivity curves are expressed as two measures of productivity typically used in the mining industry.

The tonnage efficiency curve shows the tonnes produced by total employees costed. This measure of productivity shows the tonnage production capacity of a labour force. The annual reports analysed for this curve showed that the higher producing mines will have the best tonnage efficiency per total employee costed.

The product efficiency curve includes grade produced as an additional factor. This measure of productivity shows the product produced per total employee costed. This shows the efficiency of the labour force to produce the product. Lower grade operations may employ more labour producing less tonnes with mining operations scattered to ensure an economic grade can be produced. The tonnage efficiency may not be good but the product efficiency is aligned with industry. The data analysed showed the variance for this measure is much lower than for the tonnage efficiency.

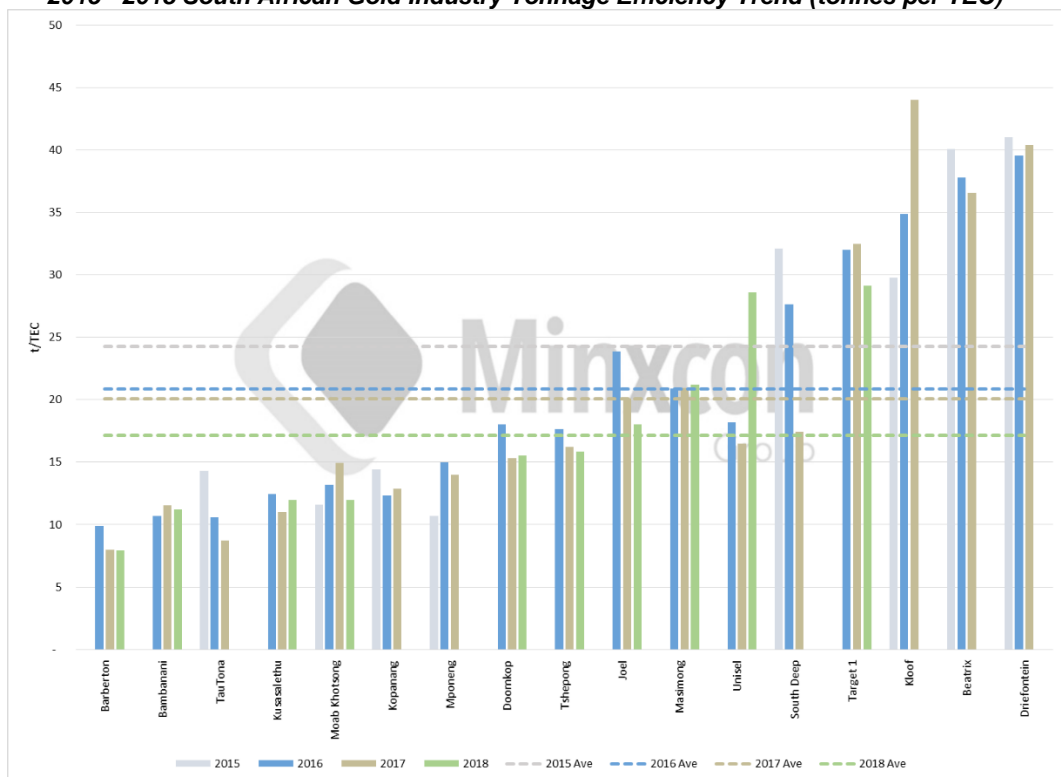
When comparing productivity, it is valuable to understand the productivity trends over time to ensure the changes in efficiency are accounted for in planning. The data analysed suggests the average tonnage efficiency in the South African gold industry consistently decreases annually. From 2015 to 2018 the average reduced by 29%.

◇ **Tonnage Efficiency Curve (t/TEC)**

◇ **Product Efficiency Curve (g/TEC)**

◇ **Productivity over the last 3 years reduced by 29%**

2015 - 2018 South African Gold Industry Tonnage Efficiency Trend (tonnes per TEC)



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