

ECONOMIC IMPACT ASSESSMENT OF THE LOMOTENG MINE

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M.C. Viviers
Professional Accountant (SA)
SAIPA 19262

INTRODUCTION

Economic impact analysis (EIA) examines the effect of the proposed mining operation on the economy of the given area. Economic impact is usually measured in terms of changes in economic growth (output or value added) and associated changes in jobs (employment) and income (wages).

The analysis typically measures or estimates the level of economic activity occurring at a given time with the proposed mining project occurring, and calculating the difference from what would otherwise be expected if the proposed mining project did not occur (which is referred to as the counterfactual case). The term economic impact can be applied to analysis of the economic contribution of the proposed mining activity to the existing local economy.

In view of the nature and magnitude of the proposed mining operation, the expected changes in the economy of the Postmasburg area, will be significant in terms of their contribution to the range of important economic variables used in our calculations.

OBJECTIVE

The objective of this study is to determine the impact of the proposed mining operation on the local economy and of special importance the change of lifestyle in the land owners, the neighbouring land owners, the community and local suppliers.

LITERATURE REVIEW

The following economic benefits related to mining is as follows:

- Mining contributes to direct community investment that mostly benefits the local economy.
- Mining is a high value added sector, in other words each mineworker adds larger amounts of value to the mining environment than other business sectors.
- Mining contributes to gross domestic product.
- They create opportunities for local suppliers of goods and services.
- Technology and skills are brought to the mining environment which can later be transferred to other sectors of the economy.
- The capital needed to undertake mining can make a material impact on the hosting economy.
- Mining has the potential to kick start economic development that few other businesses, for example manufacturing, offer for it is the beginning of the value chain.

METHODOLOGY

Underlying the general theory of economics is a fundamental law: for every income there is a corresponding expenditure (Pyatt, 1988). Our calculations are based on this fundamental law on a conservative basis. The economic impact estimates we

compiled were with the aid of an Input-Output (I-O) model of the Hoover County economy. An I-O model is a sophisticated accounting of inter-industrial transactions in a region of scrutiny that tracks the flow of commodities and services into industrial inputs, into household consumption or as exports to domestic and foreign purchasers.

There are several important pieces of economic information that are produced by our I-O modelling process.

1. Industrial output
The industrial output is the gross sales of the new proposed mining operation. (See Table 3 Revenue for year 1 for the proposed mining operation)
2. Employment
The modelling system looks at the number of jobs or positions in an industry, not the number of employed persons. As people can hold more than one job, there are necessarily more jobs in an economy than employed persons.
3. Value added
Value added is the sum of all wage and salary payments that are made to workers, plus the normal profits accruing to sole proprietors, plus payments made to investors in the forms of dividends, interests, or rents, and indirect excise, and, finally, the sales and excise tax payments made by individuals to governments.
4. Labour income
Labour income is a subset of value added and consists of all payments to workers and profits or payments to land owners. Labour income is particularly important because it represents the amount of value added that is highly likely to be retained in the regional and local economy.

Once the data has been obtained, captured and verified three categories of economic impact will be identified and measured. The three categories are defined as follows:

1. Direct values
Those impacts created by the new proposed mining operation itself. In this case the direct impacts are the rand outputs and the jobs directly generated by the project. Thus the mine's earnings and the persons on the company payroll or contracted to work on the project make up the direct impact.
2. Indirect values
Indirect values are the inputs to production that the proposed mining operation, purchases from the local and regional economy. We listed some of the major inputs (diesel, water and electricity) in Table 4. This is just a small fraction of the inputs that are required. The plant will make transportation, maintenance, accounting and financial, business services, legal, wholesale, and other purchases from local and regional suppliers. The more purchases that the proposed mining operation makes locally, the higher the potential

economic impact the proposed mining operation might have on the local economy.

3. Induced values

Induced effects are also called the household effects. They happen when the workers in the direct industry, the proposed mining operation, and the firms that are supplying goods and services to the proposed mining operation, the indirect industries, take their labour income and spend it on household goods and services locally.

When we add the direct, indirect and the induced effects together, we get a count of the total economic values that are potentially attributable to the proposed mining operation in question.

RESULTS - THE ECONOMIC IMPACT

EIA differs from Cost-benefit analysis (CBA). In one sense, EIA is broader in that it counts business relocation and resulting spending multiplier impacts on a given area, while CBA is usually not constrained to any specific study area and thus ignores effects of business activity shifts among locations. On the other hand, CBA is broader in that it also counts non-economic benefits that have a value to people though they do not directly affect the flow of money in the economy (such as the value of effects on personal travel time savings, safety, security and quality of life improvements).

The size of each impact is estimated and measured using statistics known as multipliers. The multipliers used in this assessment are based on size of the proposed mining operation (value of turnover) in comparison to the size of the economy (value of GGP). It is however very unfortunate that the multipliers for the region do not exist, so the size of the multipliers are really up-for-debate. This assessment went purposely conservative re the size of the multipliers.

Table 1 - Direct Data for the mining operation

	Year 1		Year 2 +	
	000'000		000'000	
Industrial Output (Gross Sales) – FE and MN	R	116.5	R	280.5
Expenditure				
Mining	R	18.50	R	22.84
Technology	R	16.55	R	33.09
Technical Skills Cost	R	12.14	R	13.41
Regulatory Requirements	R	5.02	R	12.83
Environmental Cost	R	16.83	R	0
Social and Labour	R	0.64	R	0.70
Capital Cost	R	121.97	R	151.25
Total Jobs		146		146
Earnings per job	R	72 212	R	80 235

A summary of the economic impacts is found in Table 2. As was already demonstrated in Table 1, the mining operation's direct data consist of R116,49 million in sales or industrial output, R12,14 million in labour income and 146 jobs for year 1 onwards. This plant is expected to generate R13.3 million in total value added for year 1.

When the direct and the indirect workers convert their labour income into household spending, they will induce an additional R3,6 million in additional sales in the country.

Table 2: Summary of Economic Impacts

Totals	Direct	Indirect	Induced	Total	Total Multiplier
Industrial Output	R 116 492 297	R 15 842 952	R 3 960 738	R136 295 987	1.17
Value Added	R 17 570 958	R 9 277 466	R 2 319 366	R 29 167 790	1.66
Labour Income	R 12 137 131	R 5 824 823	R 1 456 206	R 19 418 160	1.58
Jobs	146	50	15	211	1.45

The last column in Table 2 contains the total multipliers for each category. A total multiplier is merely the ratio obtained by dividing the total value by the direct value. It tells how much the local economy reacts to a unit change in the direct value. The multiplier of 1.17 for industrial output says that for every R1 of direct industrial output, R0.17 in additional industrial output has been generated in the remaining (non-mining) economy. The multiplier of 1.66 for value added means that for every R1 of value added generated in the proposed mining operation R0.66 in value added is sustained in the rest of the local economy. The labour income multiplier is 1.58. That means that for every rand's worth of labour income paid in the proposed mining operation R0.58 in labour income is generated in the rest of the local economy. The jobs multiplier is 1.45 which mean that for every 1 person employed at the new proposed mining operation 0.45 new jobs will be created in the local economy.

Impact on Gross Domestic Product (GDP)

The impact on GDP reflects the magnitude of the value added per annum in the local and regional economy due to the existence of the new proposed mining operation.

GDP consists of 3 (three) aspects namely:

- Remuneration of employees
- Gross operating surplus
- Net indirect taxes

According to table 2, the mine will be responsible for the generation of R116,49 million per annum in terms of GDP.

Impact on capital formation

For any economy to operate at a certain level, an amount of investment is needed to support such a level of activity. Capital, together with labour and entrepreneurship, form the basic productive factors needed for production in the economy. The effectiveness and efficiency with which these factors are combined will demonstrate the overall level of productivity and profitability of the production process. The other factor is technology and skills of the labour force which are also important. An example, capital to the value of R121,9 million has to be maintained on an annual basis for the proposed mining operation to operate.

Impact on employment

Labour, together with capital and entrepreneurship, form the primary productivity factors required for economic production. The manpower requirements of the proposed mining operation is for year one 146 onwards. It is apparent that approximately 146 direct, 50 indirect and 15 induced job opportunities are fully dependant on the proposed mining operations.

Impact on household income

Table 2 quantifies the impact on gross annual incomes for all households as a result of the new proposed mine. The impacts provided in the table are for total households as well as low-income households.

Impact on livestock farming

The economic value of the alternative land use was calculated according to the tried and tested method of the Department of Agriculture's present recommended stocking rate of 12 hectares per large stock unit (LSU).

Mining will disturb approximately 150 hectares per annum at full production, which disturbed areas will revert back to its current grazing capacity after 5 years.

According to calculations a total area of approximately 750 hectares of grazing land will not be suitable for grazing at any one time (from years 5 - 30). 750 hectares (disturbed land) has the capacity of 63 head of cattle (LSU at 12 units per hectare). Breeding success of 80% calculates to 50 calves per annum. The monetary value of each calf is approximately R4 000 (weaned) (current market price) which calculates to R200 000-00.

No impact to existing infrastructure on the property is foreseen, as no mining will be allowed within 100m from any structure.

The buildings of the Lomoteng Mine will be left on the mine site after closure, for use by the surface owner, if so requested by the surface owner, and will have a positive economic impact on the property.

The existing structures found within the boundaries of the mining area include:

- Diesel-, Oil- and Water tanks
- Mobile crushing and screening plants

- Wash bay
- Office buildings
- Laboratory
- Weighbridges
- Grease & Oil rooms
- Storage facilities
- Scrapyard
- Storerooms
- Transport park
- Mine haul roads
- Workshops
- Battery bay
- Tyre bay
- Toilet facilities
- Storage area for various metals
- Security house
- Residential housing for the surface owners of the surface owners of the three portions of the Farm Lomoteng 669.

Planned structures:

- Fixed crushing and screening plant
- Beneficiation plant with recycling dams
- Forty sleeping quarters for employees
- New office building
- New workshop
- Ablution facilities
- Medical stations
- Training centre

Fiscal impact

The proposed mining activity places no tax or subsidy burden on the fiscus. In addition the fiscus is receiving income tax as a result of the proposed mining operations. The various fiscal income components are:

- Property income
- Direct tax
- Indirect tax
- Transfers

The main taxes are direct tax and indirect tax where direct tax consists mainly of personal tax and company tax. Indirect taxes are value-added tax (VAT) and customs and excise tax. The VAT is a result of additional household spending and the resultant tax on that spending.

Conclusion

This is a new mining operation that will bring a new level of mining productivity to the region. In a case like this, where new productivity is generating export activity, we are safe in concluding that the plant will have an economic impact in the region. We need to limit the overall economic impact however to the productivity of the proposed mining operation and any nominal effects it might have on regional supply. We can assume, however, that the new proposed mining operation may lead to greater efficiencies in existing transportation, local businesses, lifestyles of current land owners.

IMPACT ASSESSMENT

Criteria for Assessment of Impact	Impact	Rating	Reason
Impact Description	Mining will contribute to the local economy via its impact on job creation, total disposable income and value-added activities. The mine will support business activity in the local economy for the duration of the mine.		
Project Stage	Operation Phase		
Character of impact	Positive		
Impact magnitude	Low	2	The size of the operations of the mine is relatively medium compared to the size of the local economy.
Impact extent	Local	2	The majority of economic impact will accrue to the local economy.
	Regional	3	There will be spill-over effects from the local economy to the district economy, although on a small scale.
Impact Duration	Long Term	4	The mine will be in operation for about 30 years, where this will have caused a permanent change in the structure of the local economy.
Impact of Reversibility	Irreversible	5	Economic impacts can very seldom be reversed because they change the behaviour of businesses and people.
Probability of Occurrence	High	4	The impacts will definitely occur, but the size of the impacts is debatable because of the unavailability of economic multipliers.
Ease of Mitigation	Difficult	There are no reasons why the impact must be reduced, but rather be increased. It is however very difficult to try to increase the impact because the mine will only employ 146 people and will spend about 80% in the local economy.	

Table 3: Cash Flow Forecast and Valuation

		YEAR 1
1	REGULATION 11(1)(d) AND (f) – FE an MN Produced	166 418
2	REGULATION 11(1)(e) - Price per ton	R700
3	REVENUE	R116 492 297
4	REGULATION 11(1)(g)(i)	R18 550 324
	Mining Cost	
5	REGULATION 11(1)(g)(ii)	R16 554 859
	Technology Cost	
6	REGULATION 11(1)(g)(iii)	R12 137 131
	Technical Skills Cost	
7	REGULATION 11(1)(g)(iv)	
	Regulatory Requirements	R5 024 872
	Environmental Cost	R16 833 224
8	REGULATION 11(1)(g)(viii)	R635 430
	Social and Labour Plan Cost	
9	REGULATION 11(1)(g)(v)	R121 967 118
	Capital and Other	
10	TRANSPORT COSTS	R62 317 034
11	WORKING PROFIT / LOSS (EBITDA)	(R137 527 696)

Table 4: Indirect inputs

COST CATEGORY	YEAR 1
	Rands
Fuel	11 381 306
Water	85 000
Electricity	599 174
Stores and materials	23 036 704
TOTAL COST	35 105 184

Table 5: Calculation of Direct Value Added

	YEAR 1
	Rands
Royalties	R4 123 827
Technical Skills Cost	R12 137 131
TOTAL COSTS	R16 250 958