



MACROECONOMIC IMPACT ASSESSMENT OF MAPUTO LOGISTICS CORRIDOR

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EXECUTIVE SUMMARY

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**Together with
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MACROECONOMIC IMPACT ASSESSMENT OF MAPUTO LOGISTICS CORRIDOR

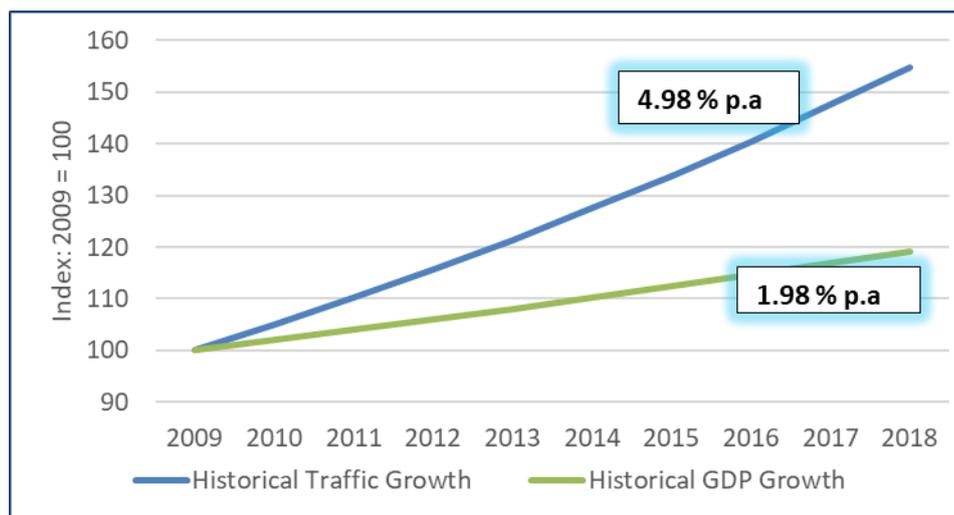
EXECUTIVE SUMMARY

Economic Importance of Maputo Logistics Corridor

The Maputo Logistics Corridor (MLC) is a key catalyst for the growth of Mozambique and other SADC Countries. The MLC includes the Lebombo/Ressano Garcia Border Post, railway lines and the N4 toll road stretching from Gauteng, going through Mpumalanga, all the way to Maputo. The main function of the MLC is to transport freight from the RSA and countries along the North – South Corridor. It gives access for these countries and access to global markets for exports and imports. The main commodities transported along the corridor comprise of mineral products, processed mineral products and agriculture products. Although the export of mineral products is mostly from South Africa, upgrading and developing the Corridor to its full potential will in all likelihood increase the possibility of the future transportation of mining products destined for exports from Zambia, Zimbabwe and DRC.

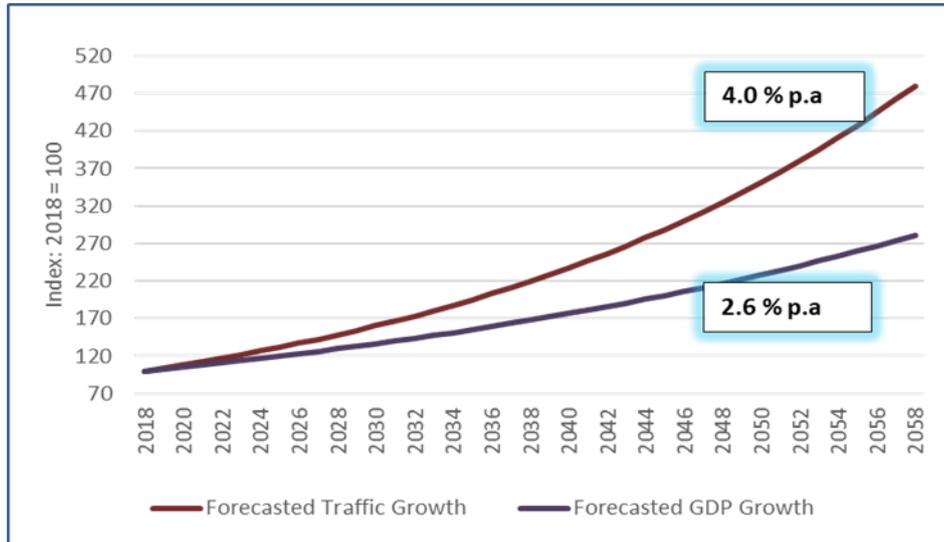
Currently the MLC carries on average 1600 heavy vehicles per day which account to about 30 MT of freight per annum. The importance of the MLC is clearly demonstrated by the growth of its traffic relative to that of the GDP of the feeder countries. The graphs below denote the historic and projected traffic growth of the MLC.

MLC Historical Traffic and Feeder Countries GDP Growth



Source: Conningarth own calculation based on econometric model.

Forecast Traffic and GDP Growth



Source: Conningarth own calculation based on econometric model.

Historically (2009 to 2018), the GDP of the feeder countries of the MLC has grown only by \pm 2% per annum over the period, whereas the traffic growth along the corridor was nearly \pm 5% per annum over the same period for both Mozambique and South Africa.

It is projected that this trend will continue in future (2018 to 2058) with traffic projected to grow at 4% per annum on average over the period and GDP to increase by 2.6% per annum over the same period. Traffic volumes (road and rail) are anticipated to increase from about 30 MT in 2018 to 140 MT by 2058.

From the two graphs above, it is evident that there is a profound traffic diversion from other corridors to the MLC and it is not only about the GDP growth of the countries serviced by the Corridor.

Macroeconomic Impact Assessment Study of Maputo Logistics Corridor

In view of the strategic importance of the Maputo Logistics Corridor, a study was commissioned by the Maputo Port Development Company (MPDC) named *Macroeconomic Impact Assessment of Maputo Logistics Corridor* to optimise the efficiency and seamless functioning of the corridor. Conningarth Economists together with Standard Bank Mozambique were appointed to conduct this study.

The main focus of the project is on the macroeconomic importance of the Maputo Port, which is the main catalyst of the MLC. It is estimated that more than 60% of all the freight traffic of the MLC is destined to and generated by the Maputo Port. However, part of the study also entails an investigation of the mobility constraint that the Ressano Garcia/Lebombo border post pose to the efficient and seamless functioning of the MLC. Currently, this component of

the Corridor is a weak link in the logistic chain of the MLC, which hampers the main flow along the corridor.

Methodology

Two economic instruments were used for purposes of this study namely: Macroeconomic Impact Analysis and Cost Benefit Analysis (CBA). Macroeconomic Impact Analysis focuses on the broader economic impact of the project, while CBA focuses on the direct (narrow) economic impact of the project.

The **Macroeconomic impacts** of this study are measured in terms of standard economic and socio-economic performance indicators such as:

- GDP (value added to the national economy);
- Employment Creation (creation of new jobs for skilled, semi-skilled, and unskilled workers);
- Capital Utilization (procurement of machinery, transport equipment, buildings and other social and economic infrastructure);
- Incremental Income generated for low-income households as a specific measure of poverty alleviation;
- Fiscal Impact (contributions to Government Revenue);
- Balance of Payments; and
- Effectiveness Criteria (the GDP/Capital ratio, and the Labour/Capital ratio), where effectiveness indicators of projects are measured and compared to national and sectoral effectiveness indicators to demonstrate how efficiently a particular project employs the factors of production to arrive at a certain output.

Cost Benefit Analysis is considered to be the most acceptable tool for ascertaining the economic viability of public and public/private sector infrastructure development projects. It provides a logical framework for evaluating such projects and serves as an aid in the project approval decision-making process. The core principle of CBA can be described as the comparison of costs and benefits, with the only complicating factor being the technique used for the discounting of future costs and benefits to present values.

Data

The following data sources have been consulted for data collection:

- Mozambique Social Accounting Matrix (SAM).
- SAM's for feeder areas along the Corridor.
- RSA, Eswatini, Zimbabwe, Zambia, DR Congo.
- Conningarth African Freight Demand Forecast Model.
- Import and Export data - Trade Map.
- Interviews with key industry informants.
- Interviews with various officials of Port terminals.
- Interviews with officials at the Ressano Garcia/Lebombo border post.
- Interviews with truck drivers.

Macroeconomic Impacts of the Upgrading and Expanding of Maputo Port

This section deals with the economic advantages of upgrading and expanding the Maputo Port. On the one hand, it demonstrates the macroeconomic impacts of such a project. On the other hand, it also serves to establish whether it is sensible to upgrade and expand the port from a socioeconomic point of view.

Macroeconomic Impacts

The average per annum macroeconomic impact outcomes resulting from the upgrading and expansion of the Port are as follows:

US\$ million	Total Impact on Port Only	Total Port Including Additional Impact on International Trade
Impact on Gross Domestic Product (GDP)	345	2 321
Impact on capital formation	1 041	4018
Impact on employment [number of job opportunities]	33 815	242 551
- Skilled impact on employment [percentage of job opportunities]	30%	25%
- Semi-skilled impact on employment [percentage of job opportunities]	37%	33%
- Unskilled impact on employment [percentage of job opportunities]	33%	42%
Impact on Households	193	1 258
- Low Income Households	13%	16%
- Medium Income Households	17%	18%
- High Income Households	70%	66%
Fiscal Impact	79	605

Source: Conningarth own calculation based on economic model.

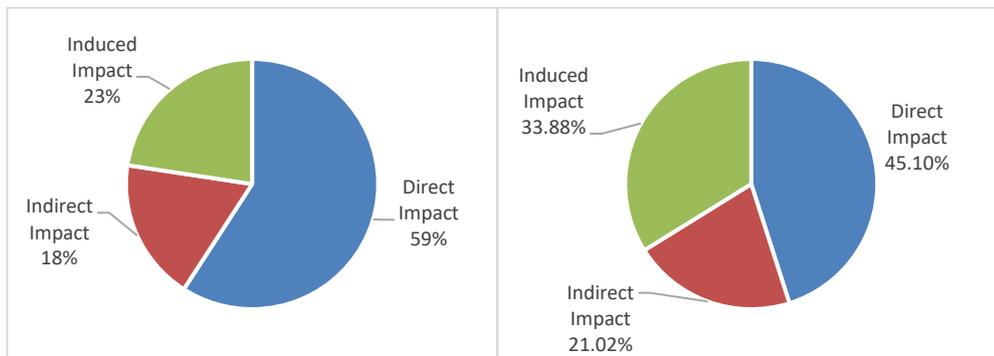
The second column of the above table depicts the total impact of the upgrade and expansion of the Maputo Port. It can be observed that the upgrading and expansion of the port contribute annually on average GDP of USD 345 million (in constant 2018 prices), generates in the order of 33 815 employment opportunities and leads annually to further capital formation of USD 1.04 billion. These impacts include the construction effect, operational effect and reinvestment effect of saving that are generated by the Project. It is important to note that the if the broader impact is considered (including the impact on international trade), the total impact of the upgrading and expanding the port will be seven times bigger than what of the port only.

The pie charts below present the various level of impacts, where:

- **Direct impact** is measured as the jobs, labour income, and value added by the Project itself;
- **Indirect impact** is measured as the jobs, labour income, and value added occurring throughout the supply chain of the components linked to the project; and
- **Induced impact** is measured as the jobs, labour income, and value added resulting from household spending of labour and proprietor’s income earned either directly or indirectly from spending activities triggered by the project.

GDP impact

Employment Impact



Source: Conningarth own calculation based on economic model.

From the above figures it can be deduced that the direct impact is more profound in terms of both the GDP impact as well as the Employment impact. Due to the capital-intensive nature of the project the direct impact of the employment impact is less than that of the GDP impact

The figure below illustrates the fiscal impact on socioeconomic services resulting from the upgrade and expansion of the port. The Government revenue consists of US\$ 79 million from taxes related to the project (directly and indirectly), plus an additional US\$526 million which consist of Government revenue from taxes related to the increase of economic activities (volume of trade) due to the expansion of the port. The total fiscal impact (including the direct, indirect and induced impact) amount to approximately US\$ 605 million in nominal values on average over the period of the project. The social indicators are calculated under the assumption that education and health are obtaining their share of the additional revenue received by the government from the Project, as well as the total cost (including overhead cost) to sustain the educators, hospital beds and doctors as shown in the figure below.



Source: Conningarth own calculation based on economic model.

Economic Credibility of the investment

The macroeconomic indicators above show clearly that the Project has a major positive impact in the economy of Mozambique. However, a question still unanswered is whether the capital expenditure of USD 1.4 billion (directly and indirectly) is sensible spending in the context of other investment opportunities in Mozambique. This question is addressed below.

Cost Benefit Analysis

The Cost Benefit Analysis (CBA) conducted for this study (also referred to as the Economic CBA), analyses the economic viability of the Project, where the economic viability is defined as the economic impact on the broader society of the country. According to the table below, the IRR of the Project is 23.7%, which is more than double the hurdle rate that is set by the Social Discount Rate of 10%. It also yields a BCR (indication of project risk) of 1.24, which signifies that the benefit and cost can be 10% lower or higher respectively, the Project will still be economically acceptable.

	Economic CBA
Evaluation Criteria	
Net Present Value (NPV) - US\$ million in constant 2021 prices	870
Internal Rate of Return (IRR)	23,7%
Benefit Cost Ratio (BCR)	1.24

Source: Conningarth own calculation based on CBA model.

From the stakeholders' investment point of view, the project is also very favourable, for instance, yielding an IRR of 18% and an NPV US\$ 641 million.

Economic Credibility of the investment according to macroeconomic criteria

The next table illustrates the macroeconomic effectiveness criteria of the Project. The first column for each criteria shows the effectiveness criteria of only port activities, whereas the second column shows the impact including the forward linkages of the Project.

From this table, where the effectiveness criteria **only deal with the port activities**, it is evident that the criteria of the port Project are lower than that of the Mozambique economy, as well as that of the main economic sectors. For instance, the labour capital ratio for the project is 32.47 compared to that of the total economy of Mozambique of 59.54. The ratio is also lower when compared to the average of the transport sector (41.77).

These indicators are a reflection of the capital-intensive nature of the Port. if the Port is considered in his own right.

It is important to note that a port does not exist only in its own right. It provides a service for other sectors which may not be able to function optimally if there is no port facility for purposes of export and import goods. Therefore, it is important that the study also take into account the results of the port including the forward linkages.

When considering the effectiveness criteria of the **port including the forward linkages**, the GDP/Capital Ratio of the Project of 0.55 exceeds that of the Mozambique economy of 0.40 and that of the transport sector of 0.48. The labour/capital ratio of the Project including forward linkages is 57.83, which is more or less in line with that for the average of the Mozambique economy (59.54),but higher than that of the transport sector (41.77). The Low/Total Income of Households ratio of 15.8% of the Project provides an indication of the impact on the income distribution (low-income households versus high-income households). The Project is lower than that for the total economy (20.76%) but is higher than the transport sector (13.13%).

Economic Effectiveness Criteria (port activities and forward linkages)

	GDP/Capital Ratio		Labour/Capital Ratio		Low/Total Income Households (percentage)	
	Only Port	Port+ Forward Linkage	Only Port	Port+ Forward Linkage	Only Port	Port+ Forward Linkage
Theme Results	0,33	0.55	32.47	57.83	13,5%	15.8%
Comparative Sectoral Results						
Agriculture, hunting, forestry and fishing	0,42		73,22		23,31%	
Mining and quarrying	0,37		22,99		15,79%	
Manufacturing	0,45		73,20		14,89%	
Electricity, gas and water supply	0,29		20,02		14,76%	
Construction	0,57		99,80		16,40%	
Wholesale and retail trade	0,63		104,20		15,88%	
Transport, storage and communication	0,48		41,77		13,13%	
Financial, insurance, real estate and business services	0,38		42,80		13,64%	
Community, social and personal services	0,46		85,62		17,94%	
Total Economy	0,40		59,54		20,76%	

Source: Conningarth own calculation based on economic model.

Impact of disruption in the logistic link of MLC

This portion of the study focuses on the macroeconomic impact of the mobility constraints that the Ressano Garcia/Lebombo border post pose to the efficient and seamless functioning of the MLC. There are currently major congestion issues at the Border Post with the truck queues of up to 10km waiting to enter the Border Post. Delays of up to 16 hours per day are often experienced, posing a huge problem to consignors and conveyors.

According to the various surveys and interviews conducted, the biggest bottle necks are red tape by customs, tax authorities and other government agencies and departments. It was also stated that the problems cannot be attributed to infrastructure shortages alone. A main reason relates to the Border Post trading hours (6am – 10 pm) which implied that trucks have to wait 8 hours before entering the Border Post area. However, as of April 2022 the Border Post trading hours changed to 24 hours per day, bringing huge relief to the logistic companies involved.

The economic benefit for the conveyors/transport operators and consignors/owner of freight is based on the financial benefits that they derive from the avoidance of the delays at the border post.

The assumptions to calculate the positive impact of the removal of constraints on the producer surplus are related to two operators, land transport operators and sea operators. Time savings for users of transport lie mainly in the benefit of goods arriving at markets or distribution points

timeously. According to the World Bank Transport Notes on CBA, these benefits are difficult to quantify and may arise through a number of mechanisms such as:

- Agriculture produces, particularly perishables arriving at markets earlier and in better condition, thereby attracting better prices; and
- Reduced stockholding requirements through restructuring of logistics and the supply sector.

In the table below the macroeconomic impacts results of the countries serviced by the MLC are depicted. The impact of delays can be severe as denoted by the loss of job opportunities in the order of 1 939 estimated for one year.

Macroeconomic Impacts Results

	Total Impact of areas serviced by MLC
Impact on Gross Domestic Product (GDP) – US\$ million (2021 prices)	21,3
Impact on employment [number of job opportunities]	1939
Impact on Households - US\$ million (2021 prices)	13,96
- Low Income Households	13%
- Medium Income Households	17%
- High Income Households	69%

Source: Conningarth own calculation based on economic model.

In the next table the sectoral impacts of the Ressano Garcia/Lebombo border post delay are given. Due to the linkage effect of the delays, it can be reasoned that the impact is wide-spread across different sectors of the economies and not impacting on only a few sectors.

Sectoral Impacts

	GDP (US \$ millions)	GDP %	Employment (Numbers)	Employment %
1.Agriculture	2	7%	209	11%
2.Mining	2	7%	18	1%
3.Manufacturing	4	17%	476	24%
4.Electricity & water	1	6%	19	1%
5.Construction	1	3%	123	6%
6.Trade & accommodation	3	16%	405	21%
7.Transport & communication	3	12%	113	6%
8.Financial & business services	4	20%	173	9%
9.Community services	3	12%	411	21%
Total	21	100%	1947	100%

Source: Conningarth own calculation based on economic model.

From the above table, it is apparent that the constraints at the border post should urgently be attended to. Various solutions are recommended for the short, medium and long term.

- **Short term solution**
 - Reduce red tape at border posts
 - Computerised Infrastructure upgrades at the border posts
- **Medium solution**
 - Upgrade of the rail system, including rolling stock
 - Introduce One-Stop Border Post at The Ressano Garcia/Lebombo border post
- **Long term solution**
 - Implement African Continental Free Trade Agreement.

Although there appears to be progress and after looking into the procedures and processes that are followed by more advanced arrangements for cross border trade that does not take place in a Customs Union like SACU or the EU, there are four major conclusions to be reached and acted upon:

- Digitisation
- A single window of service pre-border crossing
- Perform the procedures and processes at the point of departure/origin, and
- Appoint/confirm authorised bodies that adhere to integrity standards set by WTO to act as “Custom Brokers”.

In addition, the pre-clearance of cargo should be introduced that is aimed at expediting trade and reducing the release time of cargo through the advance clearing of cargo before arriving at the border, the coordination of inspections, and the improvement of information-sharing regarding risks.

The interventions proposed in this report will improve the efficiency of various stakeholders in so far as what they do has a bearing on performance at the border. The successful implementation of the suggested changes will not only improve the effectiveness of coordination and cooperation between stakeholders, but will also lead to border efficiency that is manifested in improved trade flows, increased productivity and trade competitiveness, coupled with significant declines in delays, congestion and logistics costs.