

MUSINA-MAKHADO ENERGY AND METALLURGY SPECIAL ECONOMIC ZONE

SOCIO-ECONOMIC IMPACT ASSESSMENT REPORT

June 2021

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The information contained in this report has been compiled with the utmost care and accuracy within the parameters specified in this document. Any decision based on the contents of this report is, however, the sole responsibility of the decision maker.

SPECIALIST: DR HEIN DU TOIT

Socio-Economic Assessment Specialist

Name: Dr Hein du Toit
Date of Birth: 12 February 1972
Profession: Development Economist and Market Analyst
Years of Experience: 26 years

Education:

- University of Pretoria (Cum Laude), 1991 – 1994 BTRP
- University of Pretoria (Cum Laude), 1999 – 2002 MSc (Real Estate)
- University of Pretoria in association with SAPOA, 2005 (Cum Laude) Certificate in Shopping Centre Management (CSCM)
- University of Pretoria (2018) PhD (Real Estate)

Dr Hein du Toit. Hein du Toit is the Managing Director and founding member of DEMACON Market Studies. Hein is a specialist development economist and expert real estate analyst. He obtained a degree in Town and Regional Planning (Cum Laude) at the University of Pretoria in 1994 and a Masters Degree (MSc) in real estate market studies in 2002 (Cum Laude). He has completed specialist courses in, inter alia, Industrial Cluster Development for Cluster Practitioners (1999) and Shopping Centre Management – the Certificate in Shopping Centre Management (CSCM) in 2005 (Cum Laude). Hein completed his PhD in real estate market analytical techniques in 2018 and was awarded Academic Honorary colours by the University of Pretoria in 2002 and in 2018. His research has been published in, inter alia, the South African Journal of Economic and Management Sciences as well as the international Journal of Business and Retail Management Research. Hein was invited to read a paper on his research at the International Real Estate Conference in Brisbane in January 2003. He has also been invited as presenter to the South African Council of Shopping Centres' Research Conference. Hein has more than 26 years field related experience. He has over the years been affiliated with various professional bodies and

organisations, including the SA Property Owners Association (SAPOA), the SA Council of Shopping Centres (SACSC), the International Council of Shopping Centres (ICSC), SA Planning Institution (SAPI) and the South African Research and Innovation Management Association (SARIMA). He has been extensively involved in real estate market studies both locally and beyond SA borders including Angola, Botswana, Burundi, Central African Republic, Ghana, Mozambique, Namibia, People's Republic of China, Swaziland, The Gambia and Zambia. His fields of expertise include, inter alia, real estate market studies, urban and rural economics, as well as economic and fiscal impact assessments. Hein regularly consults to SA's leading commercial banks, listed funds, private funds, investors and developers, advocates' chambers, attorneys, economic development agencies, all tiers of government (national, provincial, metropolitan/local) as well as parastatals, etc. Hein is part-time lecturer and guest lecturer for Bachelor and Master degree students. Hein periodically acts as external examiner and study leader for post graduate students.

SPECIALIST: J DU PLESSIS

Socio-Economic Assessment Specialist

Name: Jean-Pierre du Plessis
Date of Birth: 03 May 1986
Profession: GIS Specialist and Market Analyst
Years of Experience: 11 years

Education:

- University of Pretoria (2005 – 2008) - Bachelors Degree – Town and Regional planning
- ESRI South Africa (2014) - SAQA Accredited ArcGIS Basic Course: NQF 5 and 6
- ESRI South Africa (2014) - SAQA Accredited ARCGIS Standard Course: NQF 4 and 6

Jean-Pierre du Plessis joined Demacon Market Studies in 2016. Jean-Pierre obtained his Baccalaureus Degree in Town and Regional Planning (including economics, statistics & sociology) from the University of Pretoria in 2008. In Jean-Pierre's second year of study he was inducted into the Golden Key International Honour Society for excellence in his chosen field of study. The Town Planning course taught Jean-Pierre skills in verbal and graphic representation, strategic knowledge and approaches to urban and rural planning and skills pertaining to data gathering, capturing and analysis. Jean-Pierre is now furthering his career on a full-time basis at Demacon Market Studies. In the years following the completion of his degree, Jean-Pierre has been part of various studies and has gained excellent skills and expertise in the field of Geographic Information Systems (GIS). He has also recently completed multiple SAQA Accredited ArcGIS courses with Esri South Africa. He has ±12 years of field related experience.

In 2013, Jean-Pierre registered as a Professional Planner (PR. PLN 1/1768/2013) with the South African Council for Planners (SACPLAN)

NEMA APPENDIX 6: SPECIALIST REPORTS

NEMA Requirement	Addressed
(1) A specialist report prepared in terms of these Regulations must contain—	
(a) details of—	
(i) the specialist who prepared the report; and	Page ii
(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Available upon request
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Chapter 1
(cA) an indication of the quality and age of base data used for the specialist report;	All data used reference. Bibliography contained in Annexure A
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Chapter 7
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	July 2019
	Chapter 1 – Overall methodology
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Chapter 5 – Competitive and Comparative Advantage Chapter 7 – Quantitative and Qualitative Analysis
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Chapter 7
(g) an identification of any areas to be avoided, including buffers;	N/A

NEMA Requirement	Addressed
(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Chapter 1 – Locality of the project
	Chapter 5 – MMSEZ in relation to: • economic output • employment
	Chapter 6 – MMSEZ in relation to: • population distribution • population growth • employment • household income • LSM • Poverty levels
	Chapter 7 – MMSEZ in relation to tourism facilities
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Chapter 7
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Chapter 2 - Context of the MMSEZ development
	Chapter 3 - Perspective on future development as outlined by SDF's, strategic planning documents and prevailing property trends
	Chapter 4 - Prospects of industries targeted by the MMSEZ
	Chapter 5 - Economic context of communities hosting the MMSEZ
	Chapter 6 - Socio-Economic context of communities hosting the MMSEZ
	Chapter 7 - Outcome of the quantitative and qualitative impact assessment
(k) any mitigation measures for inclusion in the EMP;	Chapter 8 - Conclusions
	Chapter 7

NEMA Requirement	Addressed
(l) any conditions for inclusion in the environmental authorisation;	Chapter 7
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Chapter 7
(n) a reasoned opinion - whether the proposed activity, activities or portions thereof should be authorised;	Chapter 8
(iA) regarding the acceptability of the proposed activity or activities; and	Chapter 8
(ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Chapter 8
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	Chapter 7
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Chapter 8
(q) any other information requested by the competent authority.	N/A
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply	N/A

EXECUTIVE SUMMARY

DEMACON Market Studies were requested by the Limpopo Economic Development Agency (LEDA) to compile a **socio-economic impact assessment** as part of the **Scoping and Environmental Impact Reporting process** for the **Musina-Makhado Energy and Metallurgy Special Economic Zone (MMEMSEZ)**.

The proposed MMEMSEZ is located across the shared border between the **Musina and Makhado Local Municipalities** which fall under the Vhembe District Municipality in the Limpopo Province. The nearest towns are Makhado (located 31 km south) and Musina (located 36 km north) of the proposed SEZ site.

The MMSEZ will comprise an offering of **mixed land uses and infrastructure provision** to ensure the optimal manufacturing operations in the energy and metallurgical complex. It is envisaged that the energy and metallurgical complex shall comprise **various manufacturing plants**.

In the context of the brief, the project will be executed in terms of an **economic impact modelling framework**. The methodology applied as part of the research project is outlined in the following diagram and explained in greater detail in the following paragraphs.

STEP 1: INCEPTION AND PROJECT DEFINITION

The step will serve to refine the scope of the brief. It is imperative that the economic impact assessment to be performed, is tailored according to the project's unique requirements.

STEP 2: BASE PROFILE AND TREND ANALYSIS

The step will seek to compile a comprehensive status quo dataset on the affected local economies, as well as pertinent land use and concise demographic / socio-economic indicators and profiles. These datasets will provide vital base information for development of the impact model for the area.

STEP 3: MODEL DEVELOPMENT AND IMPACT ASSESSMENT

The purpose of the step is to develop and calibrate an econometric impact model and simulate the economic effects of the proposed project as described in the preceding step and quantify the multiple economic impacts of the project by means of a computerised economic simulation model based on the input-output technique.

STEP 4: IMPLICATIONS, RECOMMENDATIONS AND INPUTS TO MITIGATION PLAN

The results obtained from previous steps will be interpreted to ensure sustainable development of the project. market based implementation guidelines will be formulated to guide project implementation towards maximising potential economic impacts and project sustainability.

Step 1

- Inception and Project Definition

Step 2

- Base Profile and Trend Analysis

Step 3

- Model Development and Impact Assessment

Step 4

- Implications, Recommendations and Inputs to Mitigation plan

DEFINING THE ZONE OF INFLUENCE

The locality, or zone of influence, is based on the concept of host and supporting municipalities. The host municipality refers to the geographic region (administrative demarcation) which is home to the SEZ project in question, while supporting municipalities are geographic regions that border the host municipality and are regions where labour and other resources and services are potentially sourced.

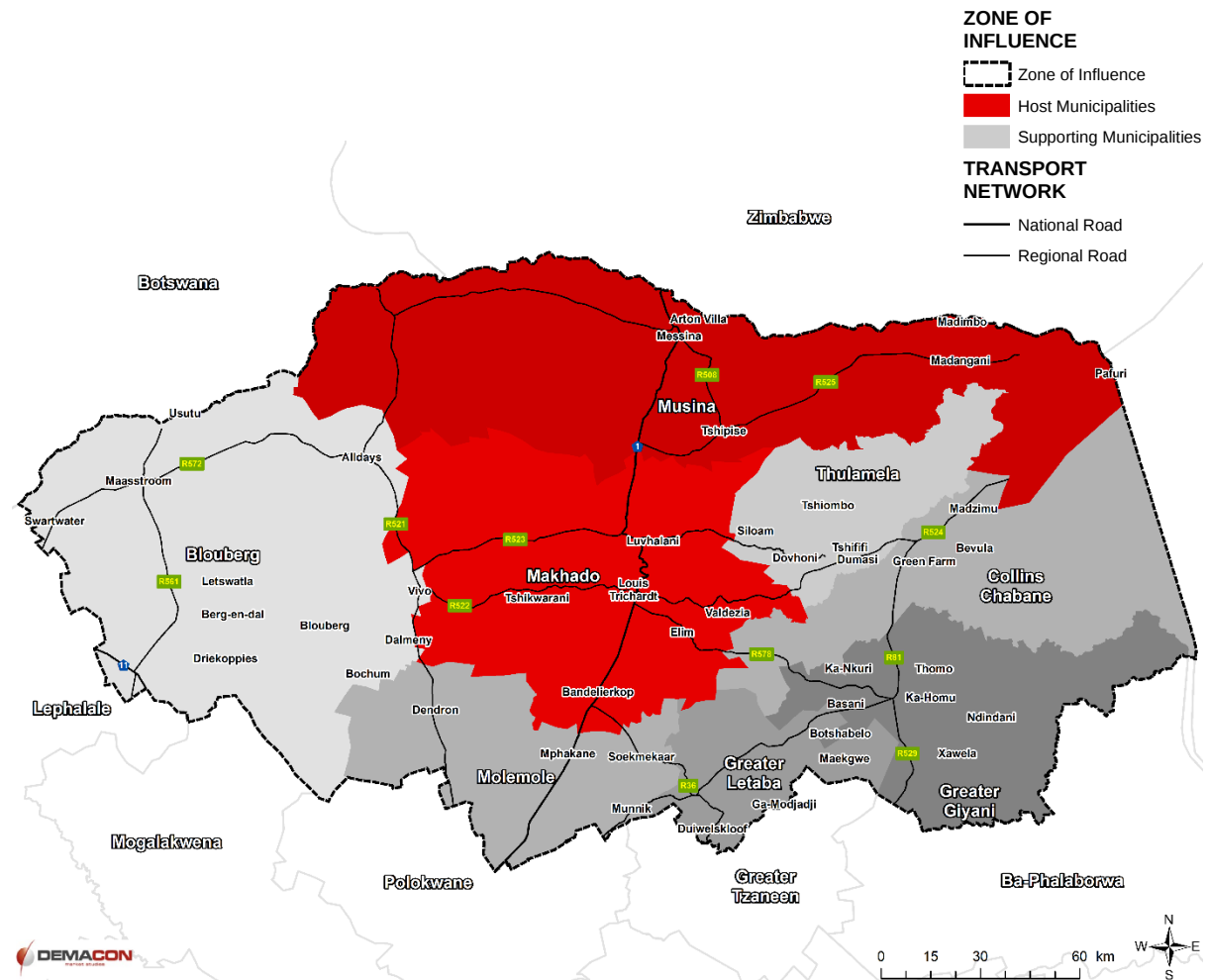
The proposed inclusion of the MEMSEZ has a sphere of influence which extends to the following areas:

- ✓ The host municipalities:
 - Musina Local Municipality and Makhado Local Municipality which includes the towns of Musina and Louis Trichardt and contains a portion of the Venda Tribal Authority homeland.
- ✓ The supporting municipalities:
 - which include the Greater Giyani, Greater Letaba, Thulamela, Blouberg, Molemole, and Collins Chabane local municipalities.

The economic data analysed in this report focuses on the Musina and Makhado Local Municipalities as the local economy/s in which the proposed SEZ is situated.

The Musina and Makhado municipalities are situated in the Vhembe District Municipality, which in turn is situated in the Limpopo Province. Reference is also made to these economic geographies in order to fully analyse relevant economic data.

The analysis of socio-economic data is focused on the Musina and Makhado host municipalities and bordering supporting municipalities. Detailed analysis is conducted on the host municipalities, while reference is made to supporting municipalities as well.

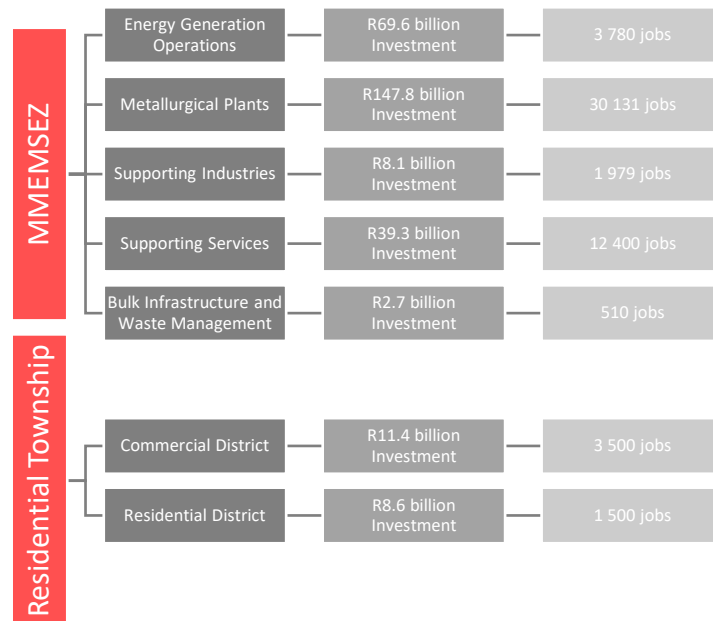


MUSINA-MAKHADO ENERGY AND METALLURGY SPECIAL ECONOMIC ZONE

The MMEMSEZ is positioned between the towns of Musina and Makhado (Louis Trichardt) and extends along the western portion of the N1 highway. The proposed development site is positioned across the shared administrative border of the Musina and Makhado Local Municipalities and is positioned within the Vhembe District Municipality administrative region. The development site consists of 8 farms totalling 8 048 hectares.

The location is positioned to function as a metallurgical cluster with the aim to beneficiate metals with supporting up- and down-stream activities. The initiative strives toward creating a mixed land-use offering that comprises necessary infrastructure that will support optimal development and operational activities once complete.

CONCISE OVERVIEW OF OPERATIONS AT THE MMEMSEZ



The proposed operations in the MMEMSEZ consists of multiple plants used for energy generation, metallurgy and bulk infrastructure supply. Proposed operations also incorporate storage facilities, bonded areas, machining, logistics, administrative functions and a visitor's lodge.

In support of the MMEMSEZ a residential township establishment is proposed. The residential township's aim is to provide residential and commercial facilities to labourers employed at the SEZ. It should be noted that the proposed residential township is to be located on land separate from the SEZ and will be under ownership of the MMSOC.

LABOUR REQUIREMENT

48 800 labourers are required by operational entities within the SEZ at full operational status compared to **5 000 labourers** in the residential township. A total of **53 800 labourers** are required by the SEZ.

According to the Internal Master Plan (August 2019):

- ✓ **60% of executive positions** are to be filled from the local labour market while the remaining 40% of positions are to be filled from the Chinese labour market.
- ✓ **75% of professional positions** are to be filled from the local labour market while the remaining 25% of positions are to be filled from the Chinese labour market.
- ✓ **95% of ordinary staff positions** are to be filled from the local labour market while the remaining 5% of positions are to be filled from the Chinese labour market.

Based on the above, on average **89%** or **47 694** of potential employment opportunities created internally by the SEZ and residential township are to be occupied by labour from the South African labour force.

MUSINA-MAKHADO ENERGY AND METALURGY SPECIAL ECONOMIC ZONE

ANNUAL OUTPUT OF THE MEMSEZ

Project Type	Total Output Value	
	USD / Million	R / Million
Total Energy Generation Output	\$3 636	R51 956
Total Metallurgical Plant Output	\$20 756	R296 600
Total Supporting Industries Output	\$1 315	R18 791
Total Supporting Services Output	\$3 200	R45 727
Total Bulk Infrastructure Output	\$171	R2 444
Total Commercial District Output	\$900	R12 861
Total Residential District Output	\$500	R7 145
Total MEMSEZ Output	\$29 078	R415 518
Total Residential Township Output	\$1 400	R20 006
Total Output Value	\$30 478	R435 523

REVENUE STREAMS

The income derived from revenue streams (i.e. moneys paid by operational entities in the SEZ to the SEZ Operator for services rendered) are used by the SEZ Operator for capital, operating and maintenance purposes.

The revenue streams include:

- ✓ Potable water purification and distribution;
- ✓ Process water treatment & distribution;
- ✓ Electricity distribution;

- ✓ Environmental management fee including a rehabilitation fund;
- ✓ Municipal waste collection
- ✓ Rates (refuse) & taxes (property) payable to the municipality
- ✓ Operator levy to all investors for the maintenance of roads, storm water, security and other non-met red service utilities;
- ✓ Sanitation (sewerage) collection & treatment,
- ✓ Industrial waste management, and
- ✓ Land lease to all investors.

The revenue generated from the above revenue streams assist with the payment of service level agreements to other entities for services rendered to the SEZ. Services include:

- ✓ Municipal waste collection or fee at landfill site
- ✓ Taxes payable applicable to the municipality
- ✓ Bulk service providers e.g. water and electricity
- ✓ Land lease cost to SOC

SEZ IMPLEMENTATION PHASING

According to the Internal Master Plan (August 2019) the broad phasing and operation of components of the SEZ is structured as follows:

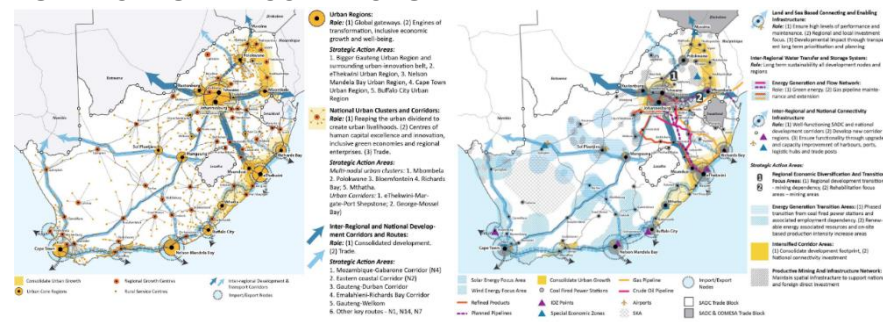
Item	Construction Start (Year)	Construction End (Year)
Early Works and Internal Bulk Infrastructure	2020	2021
Phase 1 Construction	2022	2026
Phase 2 Construction	2026	2029
Phase 3 Construction	2029	2031

LOCATION ANALYSIS – NATIONAL, DISTRICT AND LOCAL CONTEXT

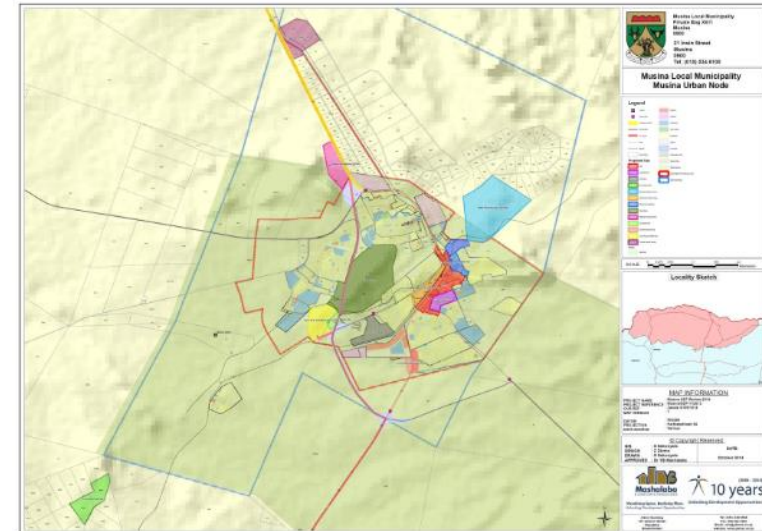
KEY ATTRIBUTES

- ✓ The Musina area has been identified as being a rural service point by the NSDF, whilst the Makhado area has been identified as an urban growth point.
- ✓ The role of the Makhado area is to be an urban-rural anchor providing essential social economic services to surrounding rural communities. Linkages should be promoted to encourage accessibility.
- ✓ The Musina and Louis Trichard towns have been identified as provincial growth points by the local and provincial spatial development frameworks.
- ✓ The N1 highway is considered the primary corridor for both host municipalities and aligns to future investment expectations related to logistics and industrial development.
- ✓ The Musina host municipality is home to the logistics section of the Musina-Makhado SEZ. The Limpopo Eco-Industrial Hub is also planned north of the Musina town in order to link logistics and international trade to the proposed hub.
- ✓ The housing backlog in the host municipalities is in excess of 16 000 households. The host municipalities are not accredited to implement subsidy housing projects thus backlogs are dependent on provincial planning, funding and implementation.

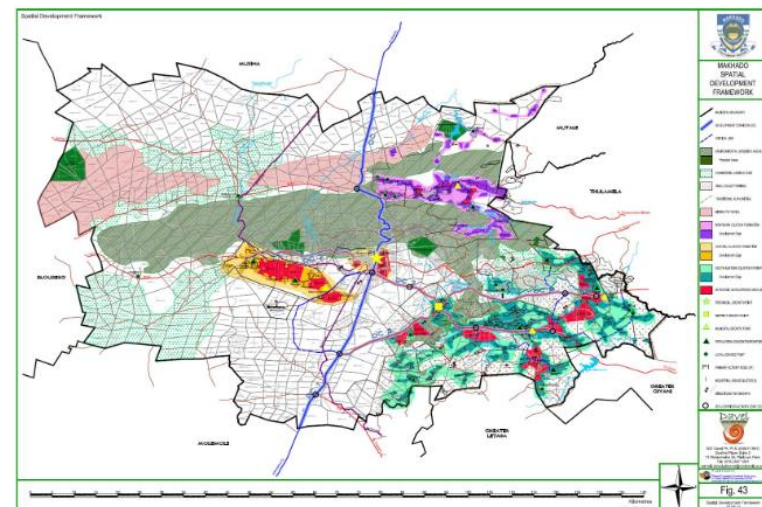
NSDF NODES AND CORRIDORS



MUSINA SPATIAL DEVELOPMENT FRAMEWORK



MAKHADO SPATIAL DEVELOPMENT FRAMEWORK

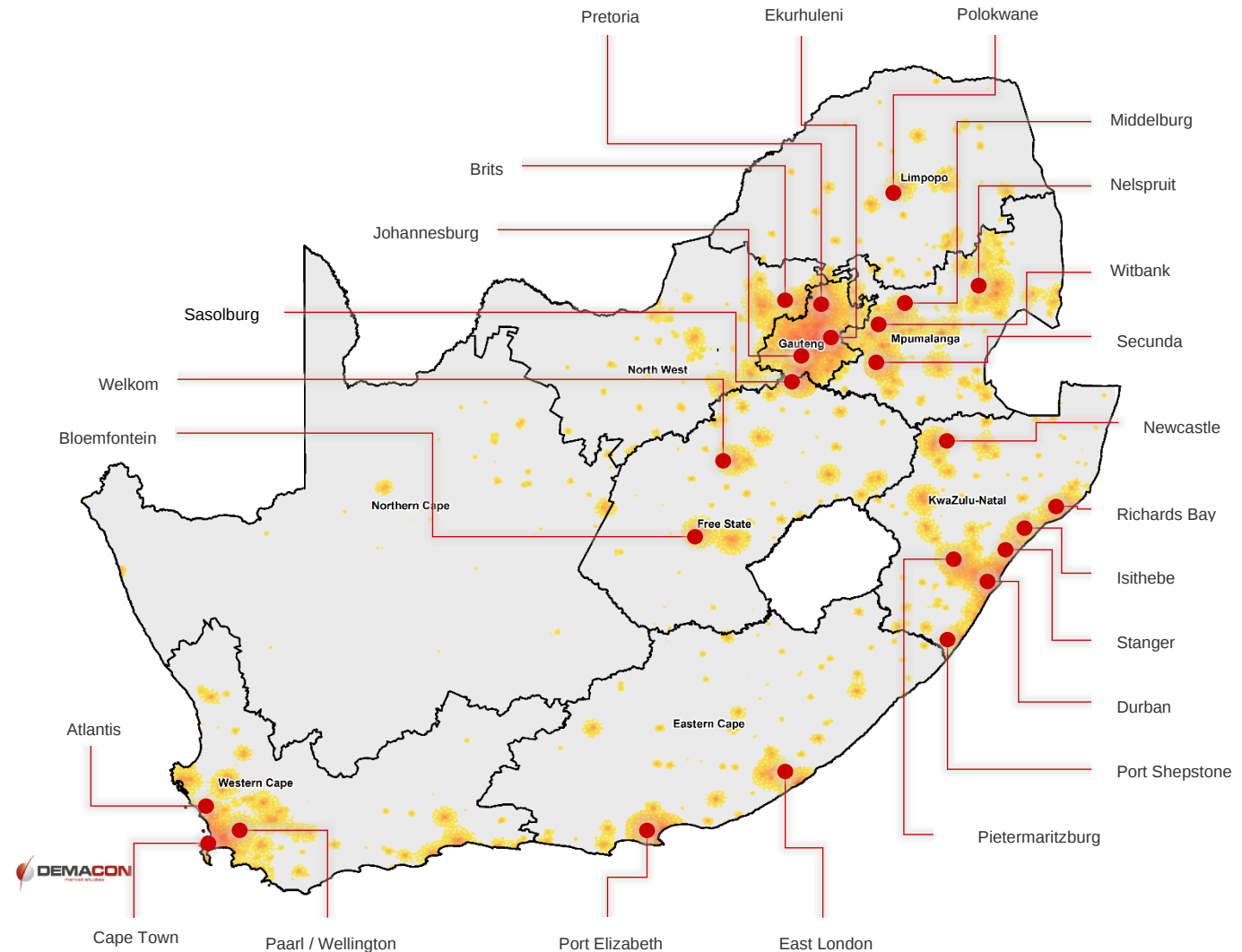


MANUFACTURING SECTOR – NATIONAL CONTEXT

Based on the primary output of operations proposed as part of the MMEMSEZ, the following section considers the manufacturing sector of the South African, Limpopo Province and Host municipalities.

Because the metallurgical operations at the SEZ seek to produce various metal related products, it is essential to consider operations in light of the manufacturing sector so as to determine the role and function of metallurgical operations specific to the project within the manufacturing sector.

The following map provides an overview of the distribution of manufacturing activities throughout South Africa based on GVA output per Meso Zone. The map seeks to show the **concentration of manufacturing output** and assists with the identification of primary manufacturing nodes. The distribution of manufacturing nodes is used to determine the context of the Musina-Makhado SEZ in relation to major manufacturing areas.



MANUFACTURING SECTOR – NATIONAL CONTEXT

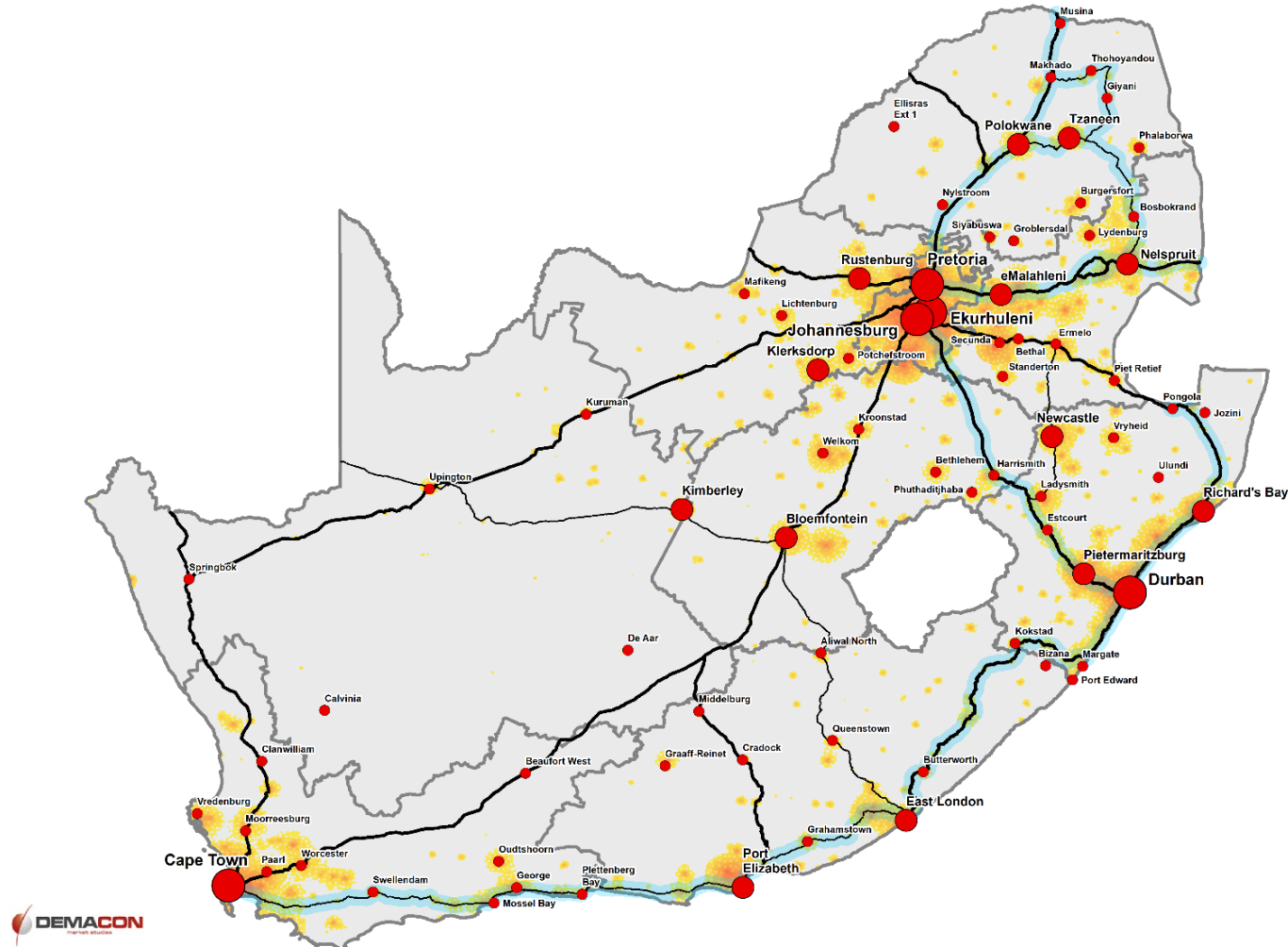
Apart from the distribution of manufacturing sector output, the relationship which the manufacturing sector has with NSDF identified national nodes and corridors provides an indication of the future direction and concentration of industrial and manufacturing activities. The NSDF has identified nodes at varying scales and importance throughout the country, these include national as well as urban regions, urban nodes of national importance and regional development anchors. The NSDF also identifies roads of national and regional importance and national development corridors.

NSDF FEATURE

- National Urban Regions
- National Urban Nodes
- Regional Development Anchors

NSDF CORRIDORS

- Key National Roads
- Key Regional Roads
- National Development Corridors



MANUFACTURING SECTOR – NATIONAL CONTEXT

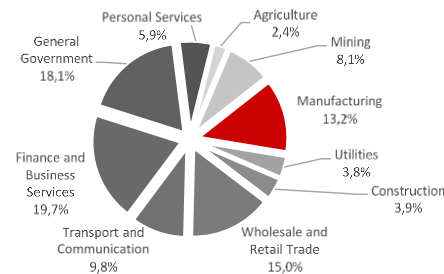
KEY ATTRIBUTES

- ✓ The manufacturing sector proportionally contributes 13.2% to national GDP and 9.3% to national employment.
- ✓ The majority of manufacturing sector GDP is produced in the Gauteng Province, whilst the Limpopo Province proportionally contributes the third lowest GDP (7.3%) of all provinces.
- ✓ Historical trends show that the manufacturing sector average annual growth has steadily been decreasing since 2008 and the proportional contribution that the sector makes to national GDP has been decreasing for the same time-period.
- ✓ In a similar fashion job creation in the sector has also steadily been decreasing since 2008 and in effect the proportional contribution by the sector has contracted.
- ✓ Exports of manufactured goods are outstripped by imports of manufactured goods.

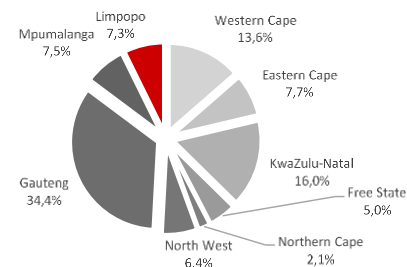
NATIONAL MANUFACTURING SECTOR



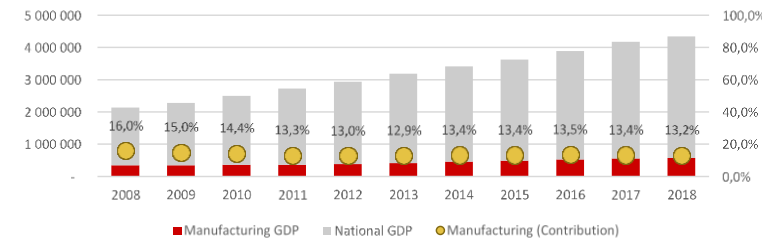
MANUFACTURING PROPORTIONAL CONTRIBUTION



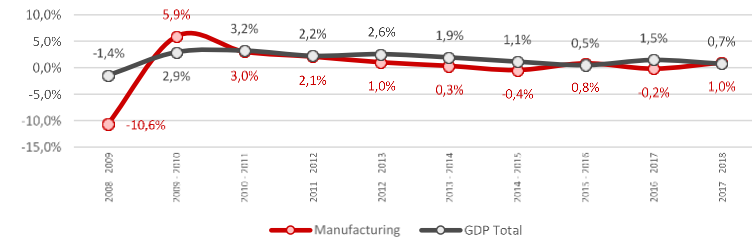
PROVINCIAL MANUFACTURING PROPORTIONAL CONTRIBUTION



MANUFACTURING GDP PROPORTIONAL CONTRIBUTION AND GROWTH



MANUFACTURING GDP AVERAGE ANNUAL GROWTH RATE



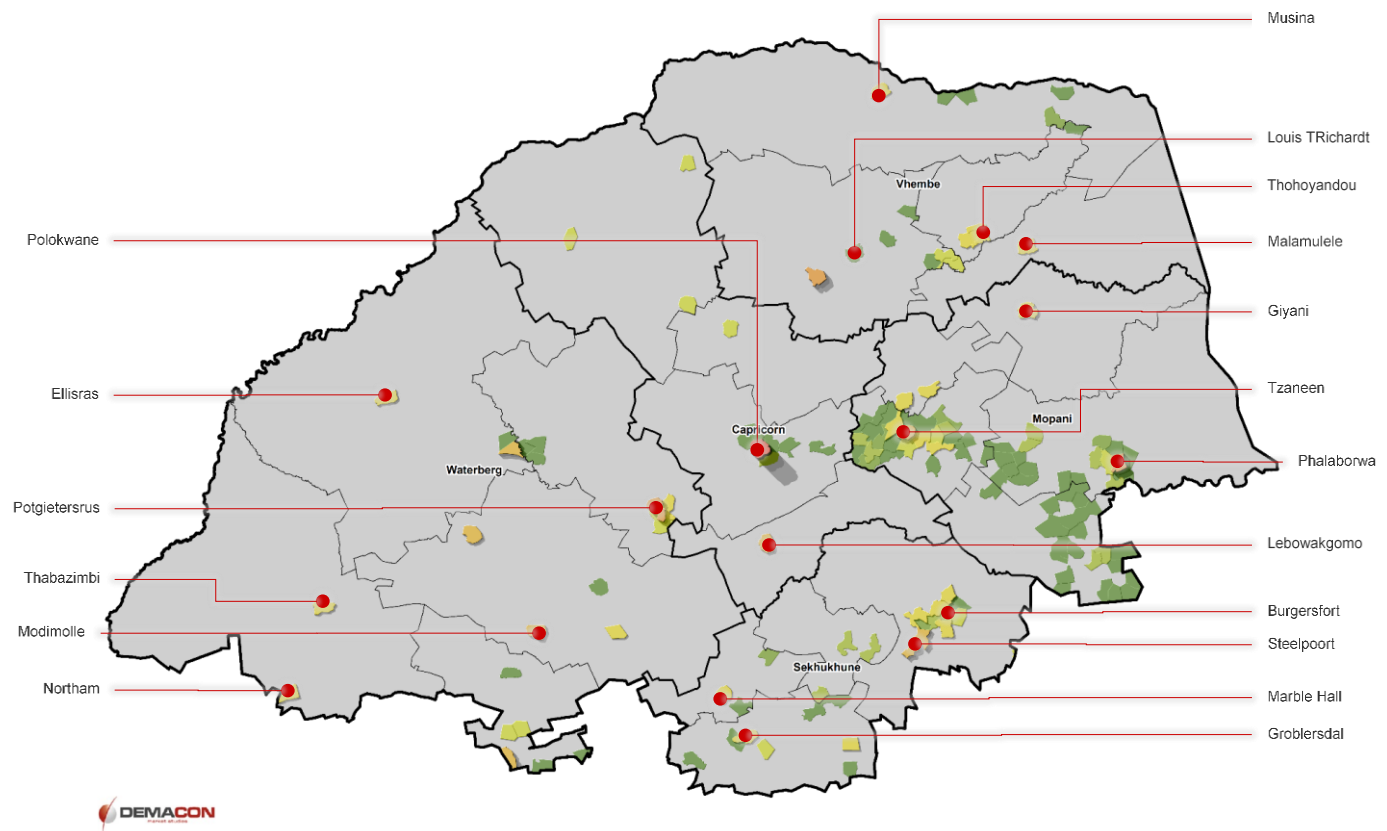
MANUFACTURING EMPLOYMENT PROPORTIONAL CONTRIBUTION AND GROWTH



MANUFACTURING SECTOR – PROVINCIAL AND LOCAL CONTEXT

KEY ATTRIBUTES

- ✓ The manufacturing sector of the Limpopo Province contributes in excess of R959 million to the national economy. Proportionally the province contributes 7.3% to the national economy. The Vhembe District is the smallest proportionally contributing district to manufacturing output for the province, contributing 12.1% or, R116 million, to total manufacturing GVA in 2018.
- ✓ The host municipalities play varying roles in regard to manufacturing GVA contribution to the district economy whereby, the Makhado host municipality contributes more than 60% to the manufacturing GVA of the district as appose to the Musina host municipality which contributes nearly 10%. In total the Makhado and Musina host municipalities contribute R703 million and R116 million respectively.
- ✓ Although the Limpopo Province and Vhembe District showed a contraction in the manufacturing sector between 2008 and 2018, the Makhado and Musina host municipality manufacturing sectors expanded during the same period.

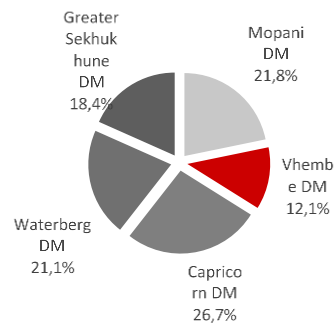


MANUFACTURING SECTOR – PROVINCIAL AND LOCAL CONTEXT

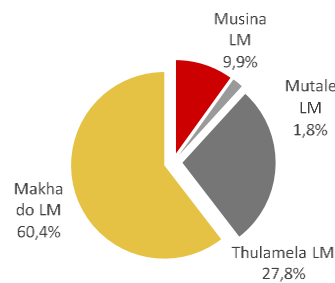
PROVINCE, DISTRICT AND LOCAL MANUFACTURING SECTOR GVA

ECONOMIC REGION	GVA (R/million)	CONTRIBUTION (%)	AVERAGE ANNUAL GROWTH RATE
Limpopo Province	R9 595	3.3% (contribution to Limpopo economy)	-0.003%
Vhembe District	R1 163	2.3% (contribution to Vhembe economy)	-0.3%
Musina Local Municipality	R116	2.2% (contribution to Musina economy)	1.9%
Makhado Local Municipality	R703	3.3% (contribution to Makhado economy)	0.5%

DISTRICT MANUFACTURING PROPORTIONAL CONTRIBUTION



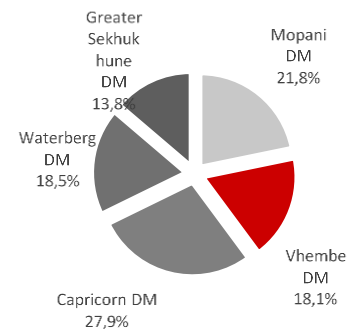
LOCAL MANUFACTURING PROPORTIONAL CONTRIBUTION



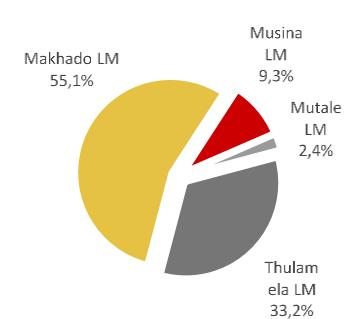
PROVINCE, DISTRICT AND LOCAL MANUFACTURING SECTOR EMPLOYMENT

ECONOMIC REGION	JOBS	CONTRIBUTION (%)	AVERAGE ANNUAL GROWTH RATE
Limpopo Province	61 667	5.7% (contribution to Limpopo jobs)	-1.1%
Vhembe District	11 143	4.7% (contribution to Vhembe jobs)	-2.2%
Musina Local Municipality	1 039	3.5% (contribution to Musina jobs)	-0.1%
Makhado Local Municipality	6 136	6.2% (contribution to Makhado jobs)	-0.9%

DISTRICT MANUFACTURING PROPORTIONAL CONTRIBUTION



LOCAL MANUFACTURING PROPORTIONAL CONTRIBUTION



METALLURGY IN SOUTH AFRICA

Due to the extensive nature of the mining industry, the country is well positioned in terms of its role in beneficiation of minerals (specifically referring to metallurgy) and the provision of semi-refined and produced products.

The historical economic and infrastructure environment of the country assisted with the establishment of the country as a global ferroalloy producer. The abundance of raw materials coupled with historically cheap and stable electricity, well developed infrastructure and relatively cheap labour has positioned the country as a leading ferrochrome producer, major manganese ore and alloys exporter and producer of vanadium products. The country also produces ferrosilicon and silicon metal ore.

The ferrochromium production industry in South Africa is by far the largest contributor in regard to ferroalloys. An abundance of ferroalloy producers currently operate within the country and export the second most (after China) ferrochromium to the world market. The ferrochromium market has been under strain recently due to major changes in the Chinese economy and the demand shown by China for steel related products.

Manganese alloy production in South Africa is a smaller role-player in the broader ferroalloys market of the country. The industry is confined to a limited number of producers and the majority of raw manganese materials are exported to major producers such as China.

Ferrosilicon production in South Africa is a limited industry whereby the majority of ferrosilicon produced in the country is utilised by domestic consumers.

The steel industry in South Africa is a major role-player in the context of local economic growth but is considered a minor global producer of crude and semi-finished steel products. Abundant raw materials do position the country as a prospective business proposition for Ghana / Germany that nevertheless have strong and exporting manufacturing sectors with a high demand for steel.

In the context of the development of the South African economy this dynamic perpetuates the challenge of beneficiation versus raw materials exports. These challenges are compounded by resource distribution, distance to port and availability of water in a largely semi-arid climate.

The distribution of production plants for ferroalloys are largely market based and therefor are concentrated in the Gauteng Province, with limited producers located in the Limpopo (Polokwane), Mpumalanga (Witbank) and KwaZulu-Natal (eThekweni) provinces (refer to the map below).

Metallurgical operations in South Africa are orientated towards markets and the proximity to natural resources as appose to agglomeration or logistical factors. The concept is further highlighted by Map 3.8 which shows the correlation of producers and proximity to markets and resources.

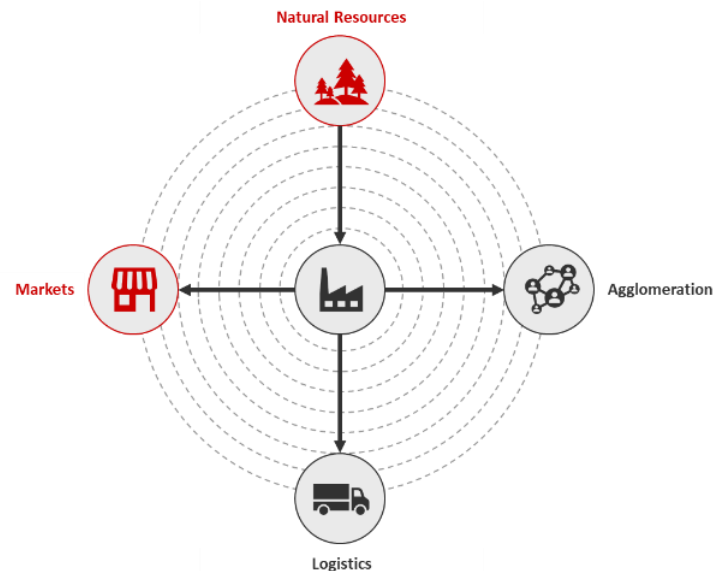
The correlation shows that metallurgical processing plants associate with the largest economic output province in the country – Gauteng. The proximity to the province allows for ease of access to users of products produced by metallurgical plants as construction and downstream beneficiation industries are to a large degree positioned in the province.

Additionally, metallurgical industries such as ferrochrome and ferrosilicon generally locate within a 50 km to 60 km radius of resource extraction locations compared to steel and ferromanganese producers who on average locate within a 300 km to 350 km radius of resource extraction areas.

One of the primary reasons for steel and ferromanganese industries to locate further from resource locations are because of the proximity of these industries to the Gauteng Province – thus indicating that proximity to markets is preferred as appose to economically isolated locations further from primary markets.

METALLURGY IN SOUTH AFRICA

SOUTH AFRICA METALLURGICAL OPERATIONS IN THE CONTEXT OF INDUSTRIAL LOCATION CONSIDERATIONS

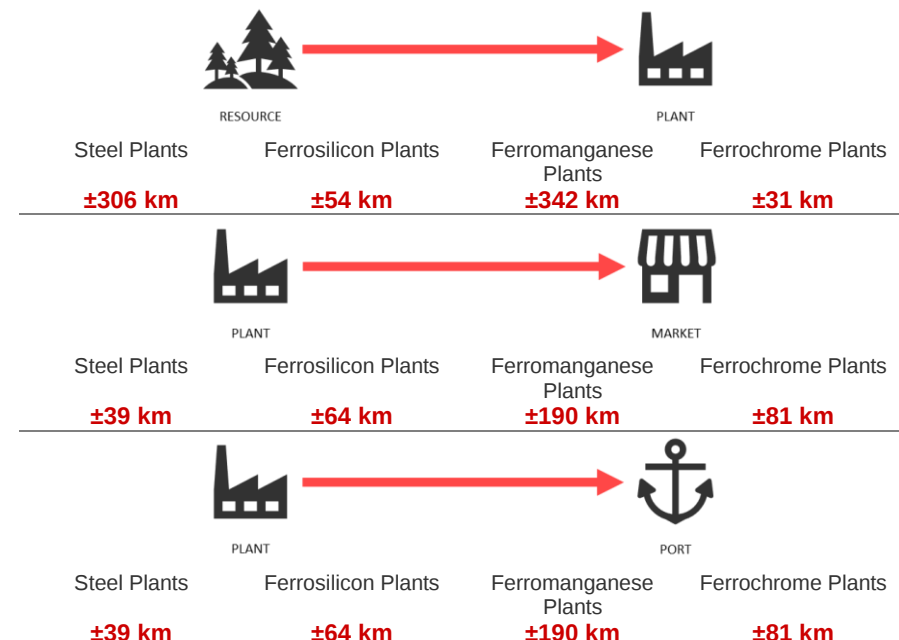


The location of metallurgical industries primarily in and around the Gauteng Province also affords access to primary logistical routes and modes of transport (rail transport). The ease of access to logistical infrastructure allows for the ease of access to major exporting ports such as Durban and Richards Bay.

The following diagram provides an indication of the average “as the crow flies” distance between 1) closest resource and processing plant; 2) processing plants and closest market; and 3) processing plants and closest port (export orientation).

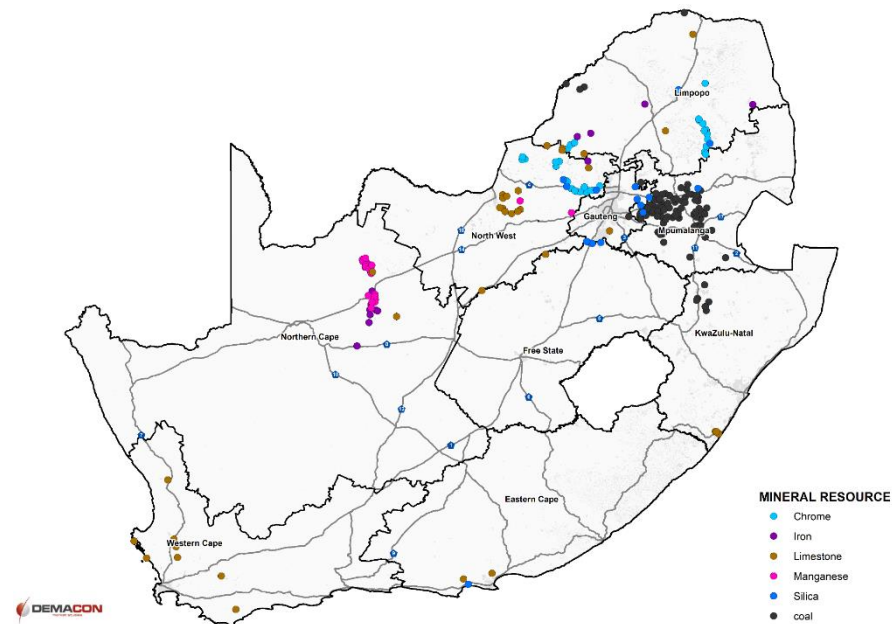
The information serves as an indication of the relative positioning of existing metallurgical industries relative to key industrial location considerations – as discussed previously.

ESTIMATED AVERAGE DIRECT LINE DISTANCE BETWEEN METALLURGICAL PLANTS AND MINERAL RESOURCES, MARKETS AND PORTS

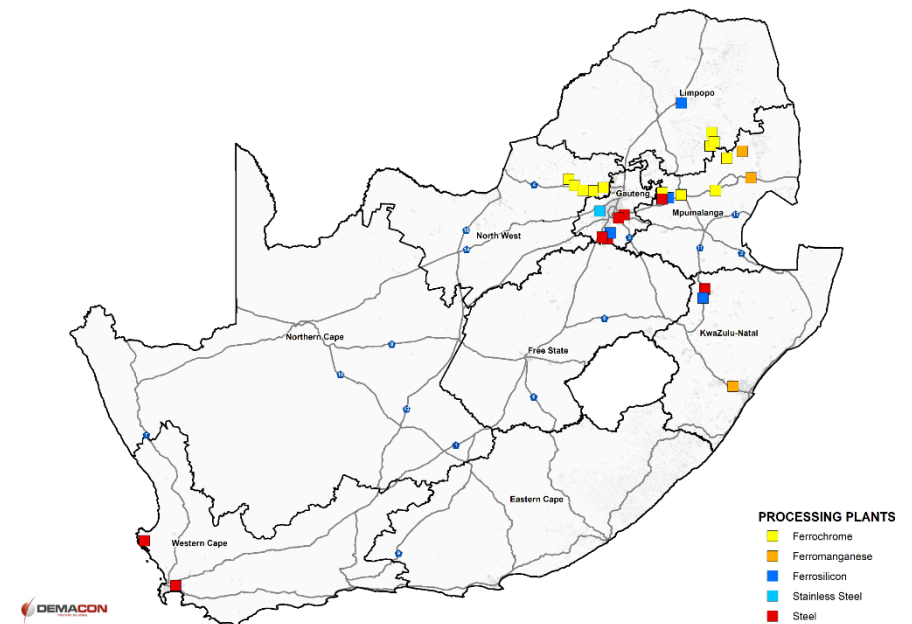


DISTRIBUTION OF MINERAL RESOURCES AND METALLURGICAL PLANTS IN SOUTH AFRICA

DISTRIBUTION OF METALLURGICAL MINERALS IN SOUTH AFRICA



DISTRIBUTION OF METALLURGICAL PLANTS IN SOUTH AFRICA



METALLURGICAL PRODUCTION IN SOUTH AFRICA

KEY ATTRIBUTES

- ✓ South African ferrochrome production has been consistent since 2008.
- ✓ More than 80% of ferrochrome produced in South Africa is exported.
- ✓ The sales value of ferrochrome both domestically and internationally has been increasing since 2008.
- ✓ The production of ferrosilicon in South Africa has decreased since 2008 and experienced a significant drop in 2017.
- ✓ Nearly 80% of ferrosilicon produced in South Africa is sold locally.
- ✓ The average export sales price of ferrosilicon has drastically increased since 2014 compared to the domestic sales price which has marginally increased over the same period.

FERRO-CHROME INDUSTRY OVERVIEW

GLOBAL IMPORTANCE

2nd

LARGEST
producer

3 484
kt (2017)

26.8%
of total global
production

1st

LARGEST
exporter

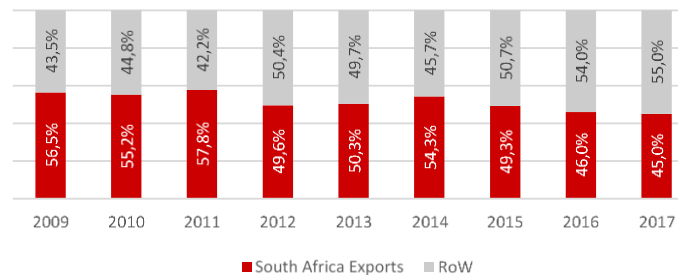
2 951
kt (2017)

45.0%
of total global
exports

KEY NOTES

- ✓ Consumption of ferrochrome rose to 12.1 Mt in 2017 mainly because of increased stainless steel production in China.
- ✓ Between 2016 and 2017 the price of ferrochrome increased by 43.7%.
- ✓ the price increase correlates with global chrome ore price increases.

SOUTH AFRICA PROPORTIONAL CONTRIBUTION TO TOTAL GLOBAL FERROCHROME EXPORTS (%)



FERRO-SILICON INDUSTRY OVERVIEW

GLOBAL IMPORTANCE

8th

LARGEST
producer

48.2
kt (2017)

0.6%
of total global
production

6th

LARGEST
exporter

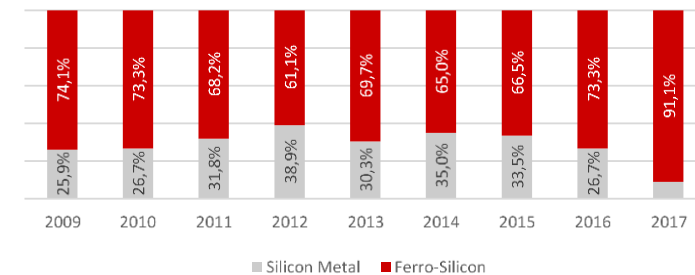
8.6
kt (2017)

3.5%
of total global
exports

KEY NOTES

- ✓ Consumption of ferro-silicon has decreased since 2016 although world steel output grew by 20%.
- ✓ Decreased consumption is the result of lower utilisation of crude steel in China and very slow growth in world output of iron castings.

PROPORTIONAL CONTRIBUTION BY FERRO-SILICON AND SILICON METAL TO SOUTH AFRICAN OUTPUT (%)



METALLURGICAL PRODUCTION IN SOUTH AFRICA

KEY ATTRIBUTES

- ✓ South African Ferromanganese production has continuously decreased since 2011.
- ✓ Nearly 90% of ferromanganese produced in South Africa is exported.
- ✓ The export and local sales price of ferromanganese has maintained similar steady growth since 2008 with a significant spike since 2016.
- ✓ The average crude steel production in South Africa has steadily been decreasing since 2008.
- ✓ The domestic market marginally imports steel to the country, whilst the majority of steel produced are utilised by local consumers.
- ✓ The total sales value of steel has increased although production has decreased. The value of steel exports have remained static

FERRO-MANGANESE INDUSTRY OVERVIEW

GLOBAL IMPORTANCE

7th

LARGEST
producer

458

kt (2017)

11.0%

of total global
production

3rd

LARGEST
exporter

271

kt (2017)

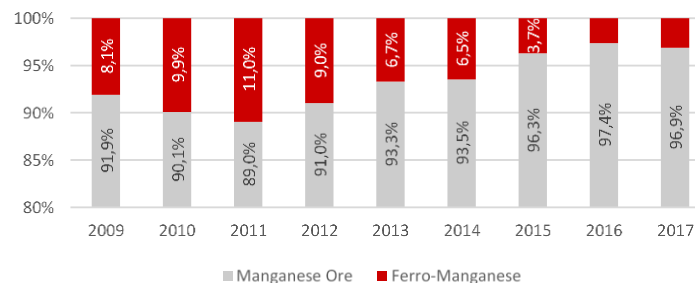
14.2%

of total global
exports

KEY NOTES

- ✓ In 2017 production slightly outstripped global demand although global demand has steadily been decreasing since 2013.
- ✓ The United States, Netherlands and Germany are the highest importers of high-carbon ferro-manganese.

PROPORTIONAL CONTRIBUTION BY MANGANESE ORE AND FERRO-MANGANESE TO SOUTH AFRICAN OUTPUT (%)



STEEL PRODUCTION INDUSTRY OVERVIEW

GLOBAL IMPORTANCE

25th

LARGEST
producer

3 484

kt (2017)

0.4%

of total global
production

31st

LARGEST
exporter

2 562

kt (2017)

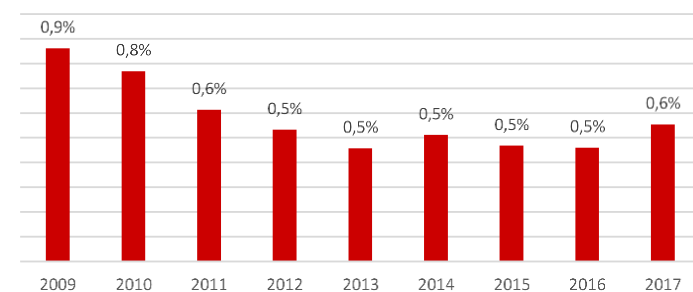
0.6%

of total global
exports

KEY NOTES

- ✓ Demand for steel is forecast to remain positive in light of China's economic deceleration, slowing global economic growth and trade policy uncertainty.
- ✓ A slow-down in developed economies is expected to lead to decreased steel demand.
- ✓ Steel demand in developing economies is expected to remain robust.

SOUTH AFRICA PROPORTIONAL CONTRIBUTION TO TOTAL GLOBAL CRUDE STEEL EXPORTS (%)



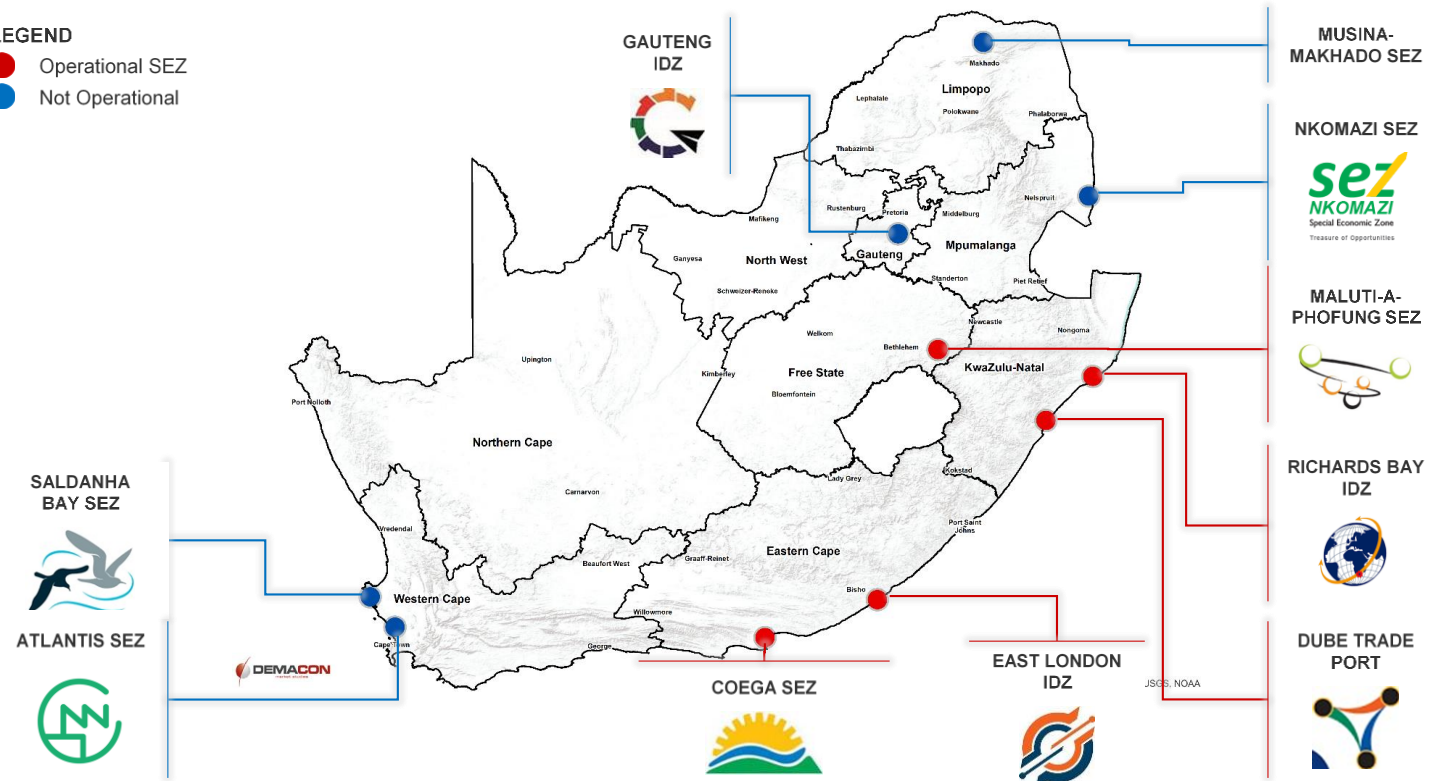
SPECIAL ECONOMIC ZONES IN SOUTH AFRICA

KEY ATTRIBUTES

- ✓ Currently, 10 SEZ's are designated in South Africa and 5 SEZ's are operational. The majority of SEZ's are distributed along the coast of the country in and around major sea and logistics ports.
- ✓ Investment opportunities in designated SEZ's in the country primarily focus on:
 - Metals beneficiation
 - Business process outsourcing
 - Agro-processing
 - Automotive industries
 - Logistics
 - ICT
 - Renewable energy
 - General manufacturing
 - Pharmaceuticals
- ✓ Metals beneficiation and metallurgy are primary focused on ferrous and non-ferrous metals and precious and semi-precious metals.

LEGEND

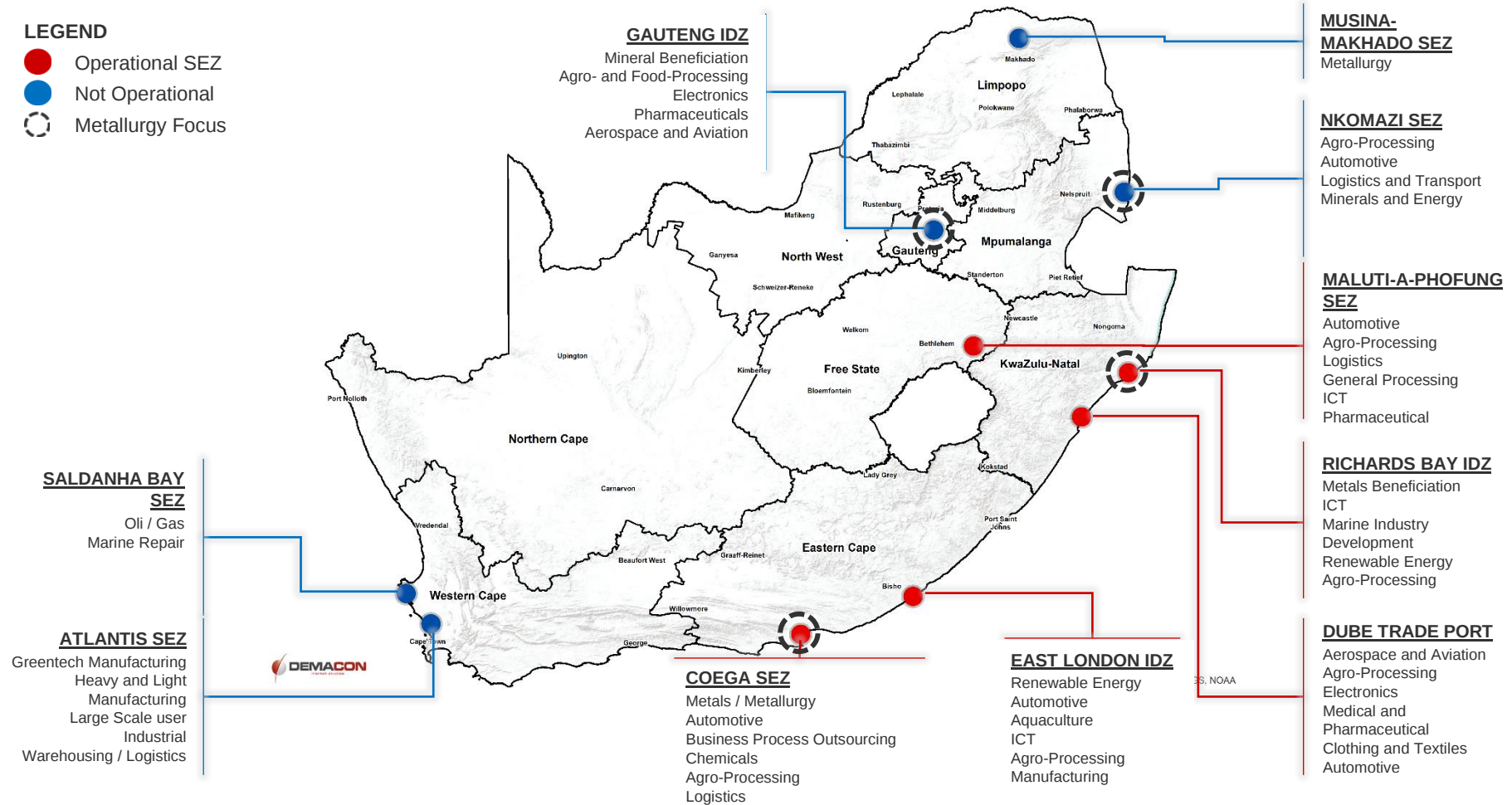
- Operational SEZ
- Not Operational



SPECIAL ECONOMIC ZONES FUNCTIONAL DIFFERENTIATION

LEGEND

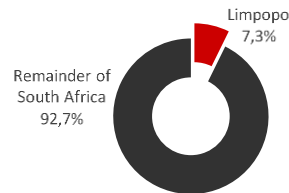
- Operational SEZ
- Not Operational
- Metallurgy Focus



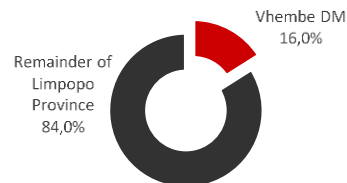
ECONOMIC PROFILE OF HOST MUNICIPALITIES

SIZE AND CONTRIBUTION BY PROVINCIAL, DISTRICT AND LOCAL MUNICIPALITIES TO ITS CONTAINING ECONOMIC GEOGRAPHY

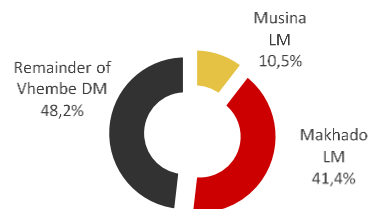
Size of the Provincial Economy



Size of the District Economy



Size of the Local Economy



SIZE OF THE LOCAL ECONOMY AND CONTRIBUTION BY MINING AND MANUFACTURING SECTORS

Musina Total GVA
R4 313 (R/million)

Mining Contribution **20.6%**

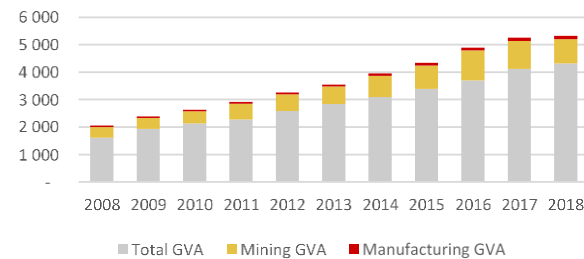
Manufacturing Contribution **2.7%**

Makhado Total GVA
R20 056 (R/million)

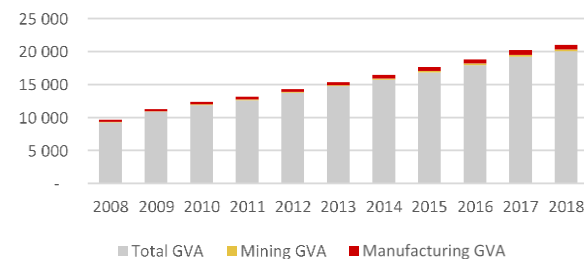
Mining Contribution **1.3%**

Manufacturing Contribution **3.5%**

MUSINA LOCAL MUNICIPALITY

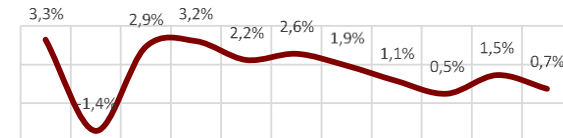


MAKHADO LOCAL MUNICIPALITY

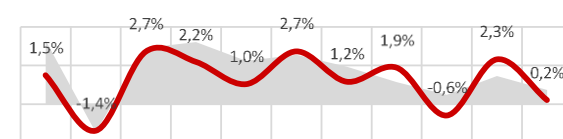


ECONOMIC GROWTH

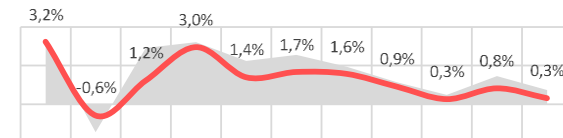
South Africa



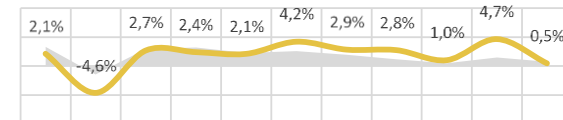
Limpopo



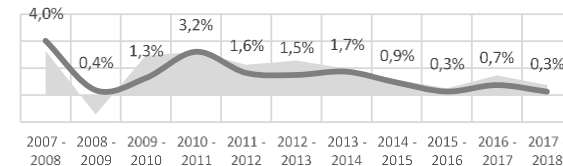
Vhembe District



Musina LM



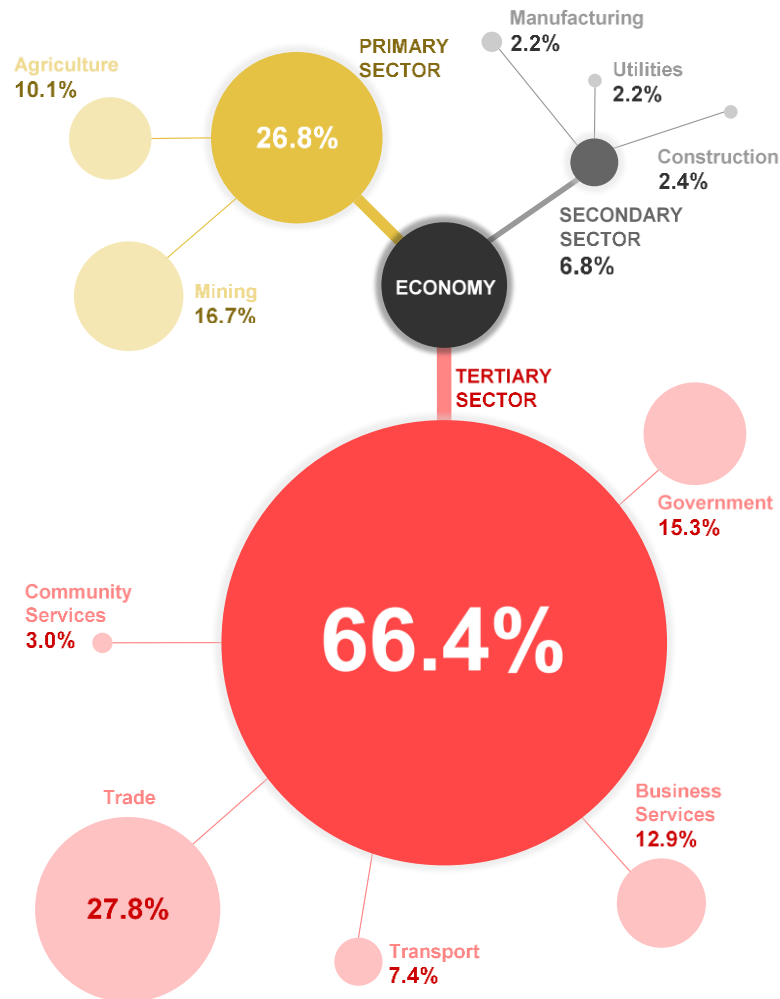
Makhado LM



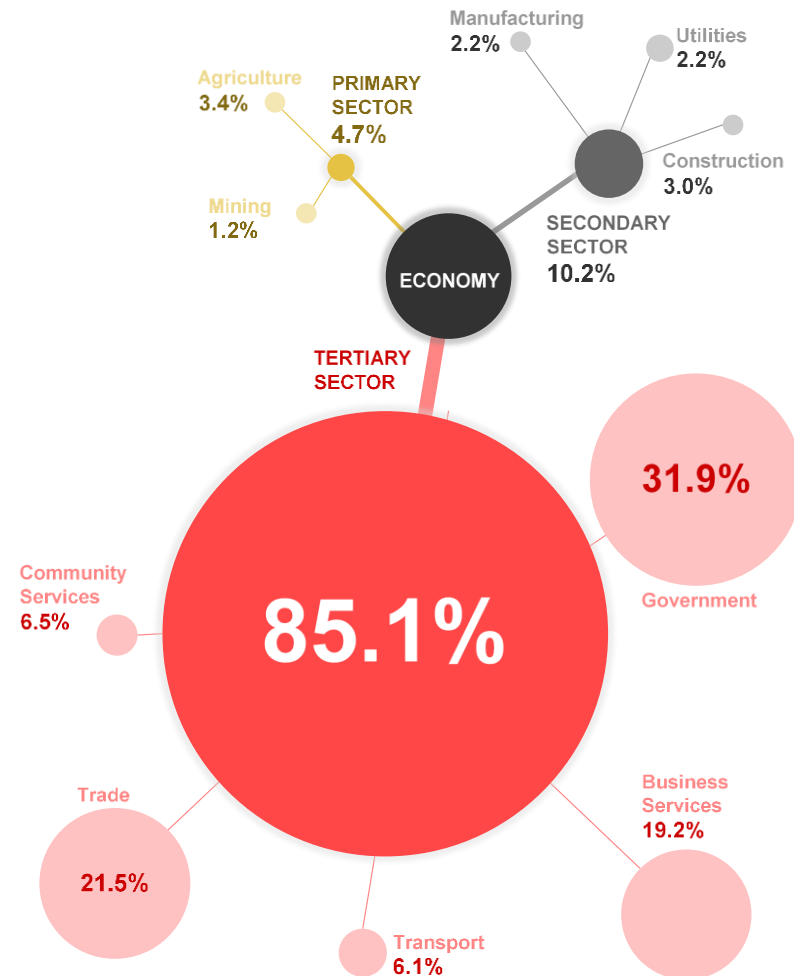
■ South Africa

ECONOMIC PROFILE OF HOST MUNICIPALITIES

ECONOMIC SECTOR CONTRIBUTION TO TOTAL GVA OF THE MUSINA LOCAL MUNICIPALITY



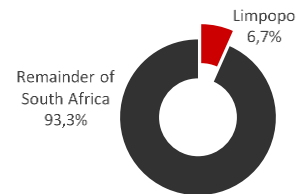
ECONOMIC SECTOR CONTRIBUTION TO TOTAL GVA OF THE MAKHADO LOCAL MUNICIPALITY



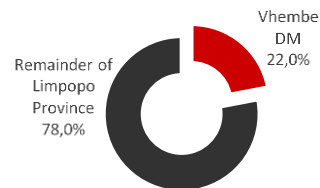
EMPLOYMENT PROFILE OF HOST MUNICIPALITIES

SIZE AND CONTRIBUTION BY PROVINCIAL, DISTRICT AND LOCAL MUNICIPALITIES TO ITS CONTAINING ECONOMIC GEOGRAPHY

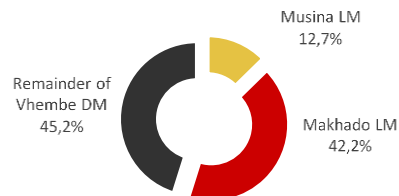
Size of the Provincial Economy



Size of the District Economy



Size of the Local Economy



SIZE OF THE LOCAL ECONOMY EMPLOYMENT AND CONTRIBUTION BY FORMAL AND INFORMAL SECTORS

Musina Total Employment
29 945 jobs

Formal Jobs Contribution **67.7%**

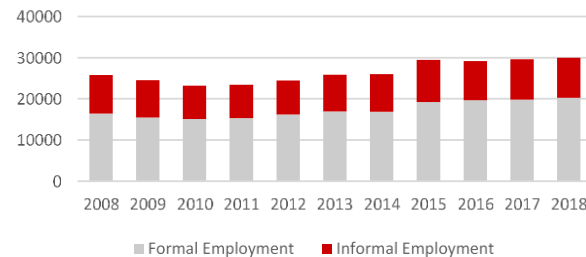
Informal Jobs Contribution **32.3%**

Makhado Total Employment
99 629 jobs

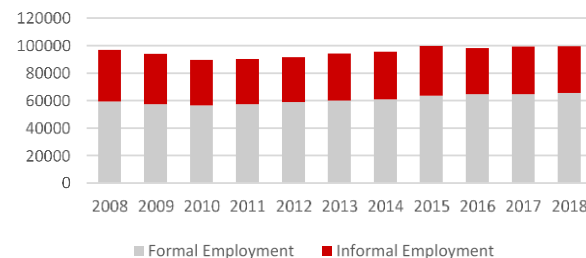
Formal Jobs Contribution **65.8%**

Informal Jobs Contribution **34.2%**

MUSINA LOCAL MUNICIPALITY

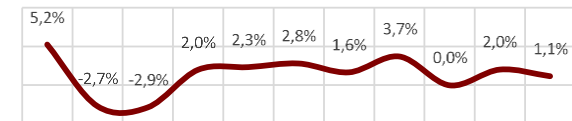


MAKHADO LOCAL MUNICIPALITY

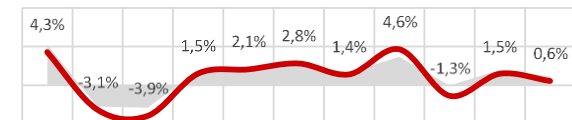


EMPLOYMENT GROWTH

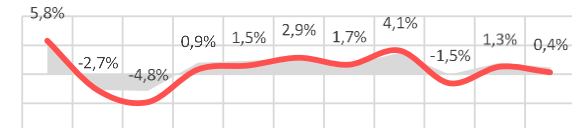
South Africa



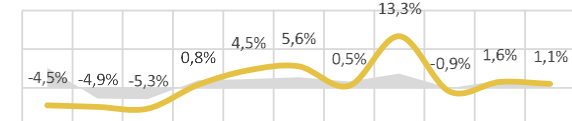
Limpopo



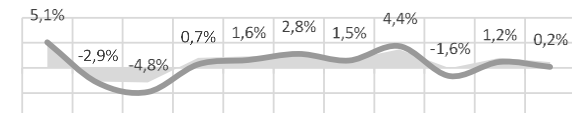
Vhembe District



Musina LM



Makhado LM

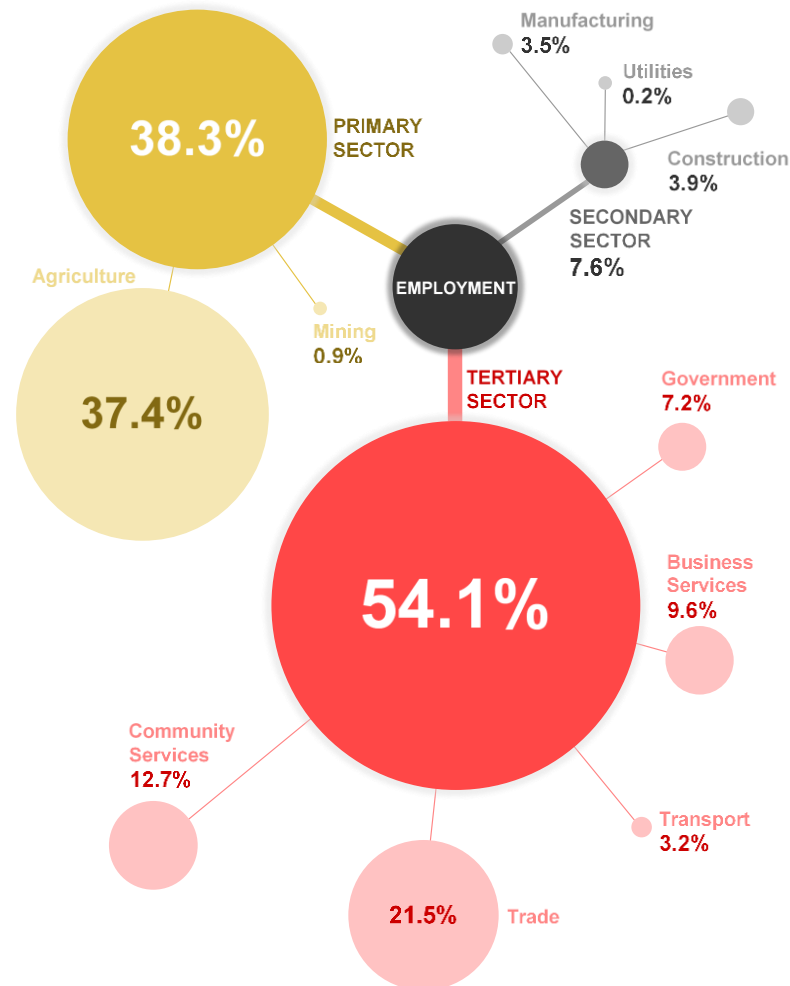


2007 - 2008 - 2009 - 2010 - 2011 - 2012 - 2013 - 2014 - 2015 - 2016 - 2017 - 2018

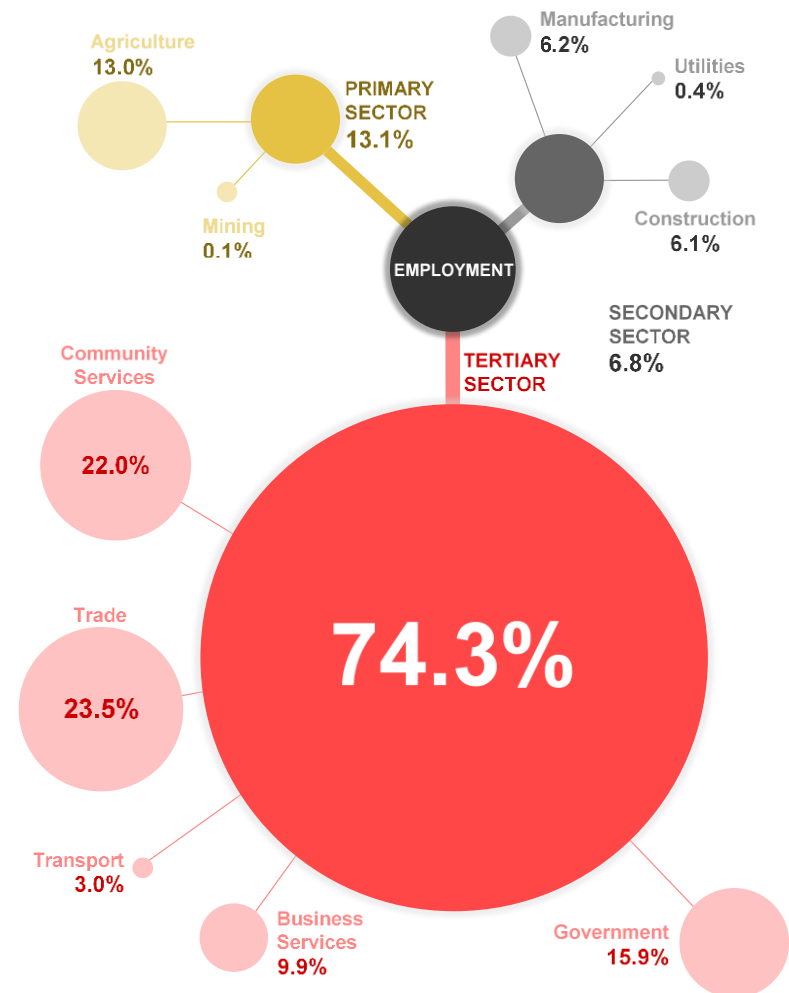
■ South Africa

EMPLOYMENT PROFILE OF HOST MUNICIPALITIES

ECONOMIC SECTOR CONTRIBUTION TO TOTAL EMPLOYMENT OF THE MUSINA LOCAL MUNICIPALITY



ECONOMIC SECTOR CONTRIBUTION TO TOTAL EMPLOYMENT OF THE MAKHADO LOCAL MUNICIPALITY



DEMOGRAPHIC PROFILE OF HOST MUNICIPALITIES – OVERVIEW

The following provides a concise breakdown of the strengths, weaknesses, opportunities and threats of the demography of the host and supporting municipalities. The purpose is to identify and refine the core problem and opportunity areas of the host and supporting municipalities in the context of the MMEMSEZ. The MMEMSEZ could influence the demography of the local municipalities but can also be influenced by the context of population and household status and capability as well as the labour force from which the SEZ is to source.

DEMOGRAPHIC STRENGTHS

- Large potential labour pool from which to source labourers for the MMEMSEZ
- Skilled labourers represent between 10% and 30% of the employed workforce
- Majority of households reside within a formal dwelling
- Majority of households have security of tenure (i.e. own the property on which they reside)

DEMOGRAPHIC WEAKNESSES

- High dependency rates of local communities
- Large portion of population aged 20+ years have not attained a matric certificate or higher (12% to 20%)
- Minimal labour absorption capacity by local economies
- Low average annual household income across all LSM groups (R35 000 to R60 000 average annual household income)
- On average more than 75% of households in host and supporting municipalities can be classified as LSM 1 - households have very limited access to household goods, services and purchasing power

DEMOGRAPHIC OPPORTUNITIES

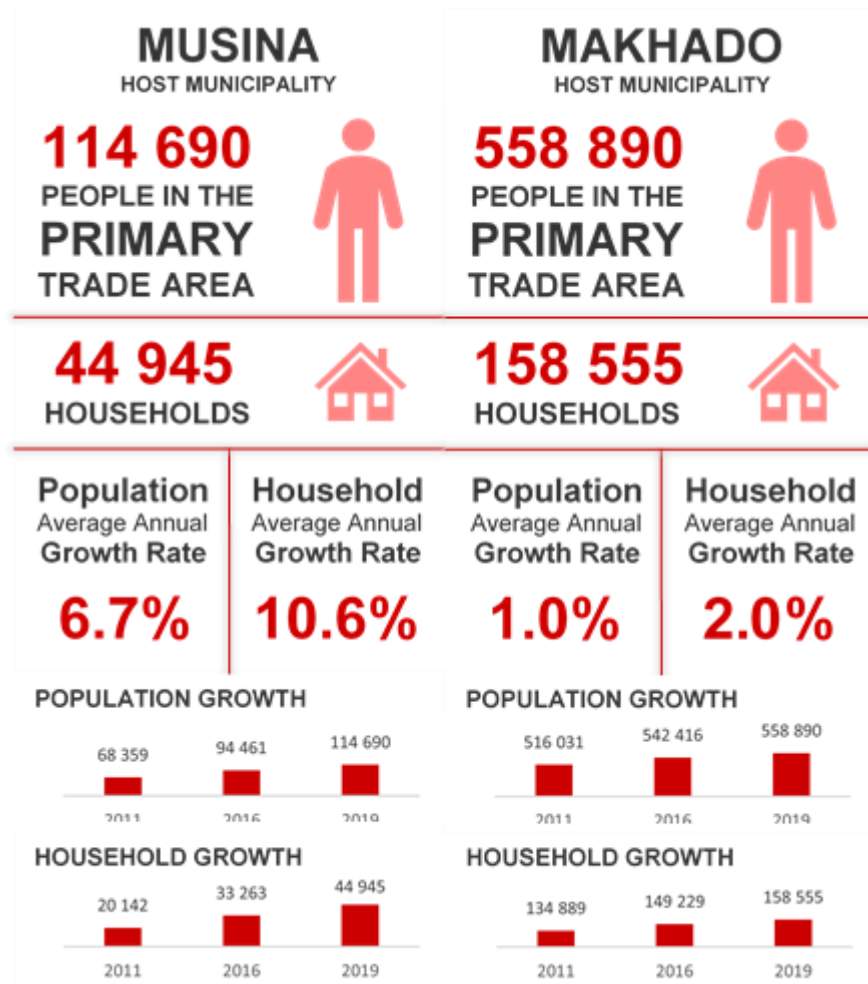
- Large potentially economically active population group (50% to 70% of population)
- Large proportion of employed persons, employed in elementary occupations - general labour skills required for the SEZ will be sourced from persons that have elementary occupation skills

DEMOGRAPHIC THREATS

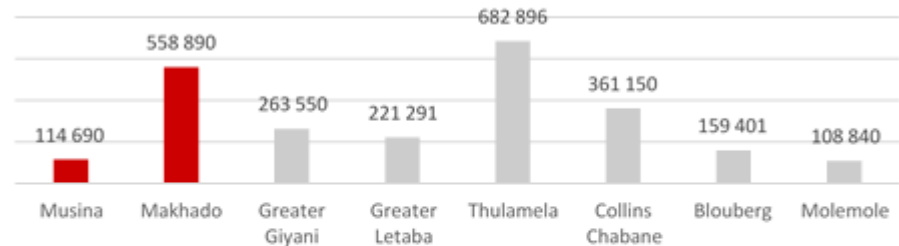
- Major population concentrations (i.e. major towns and traditional authorities) are located some distance (between 20 and 75 km) from the SEZ
- Large proportion of people aged 20+ that have no schooling (15% to 25%)
- High unemployment rate (20% to 50%)
- Extreme poverty levels in host and supporting municipalities (i.e. 50% to 70% of households fall below the food poverty line - the food poverty line indicates the capability of households to sustain each member with the minimum number of calories to support survival)

From the information above, the population of host and supporting municipalities have the capacity to supply a vast labour pool from which the SEZ could source. A sizeable skilled labour pool also exists that could support the SEZ whilst low skilled labour engaged in elementary occupations could further support general SEZ manufacturing operations. Even though the demography has a large labour pool and sizeable skilled labour force, high dependency ratios, unemployment rates, a limited number of population that have attained a matric certificate or higher, low household incomes and high poverty rates could influence the capability of the local labour force to actively engage with the SEZ. The SEZ could provide a basis from which households in the area of influence could improve their current livelihood through either direct employment at the SEZ, value-chain growth or new business development.

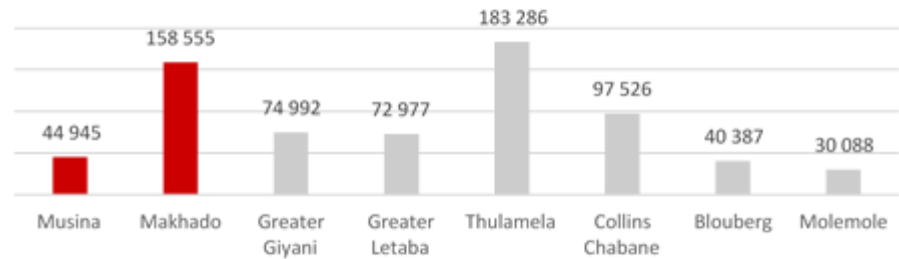
DEMOGRAPHIC PROFILE OF HOST MUNICIPALITIES – POPULATION SIZE



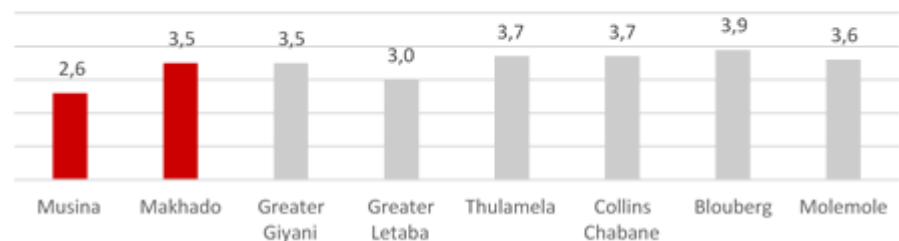
POPULATION SIZE OF THE HOST AND SUPPORTING MUNICIPALITIES



NUMBER OF HOUSEHOLDS OF THE HOST AND SUPPORTING MUNICIPALITIES

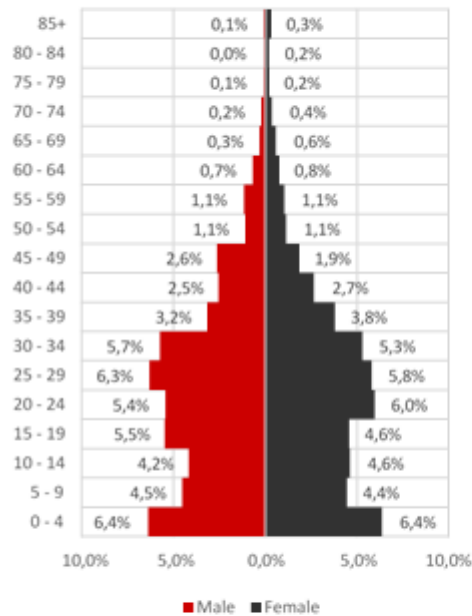


AVERAGE HOUSEHOLD SIZE OF THE HOST AND SUPPORTING MUNICIPALITIES



DEMOGRAPHIC PROFILE OF HOST MUNICIPALITIES – AGE PROFILE

MUSINA HOST MUNICIPALITY



49.9%

of the population is

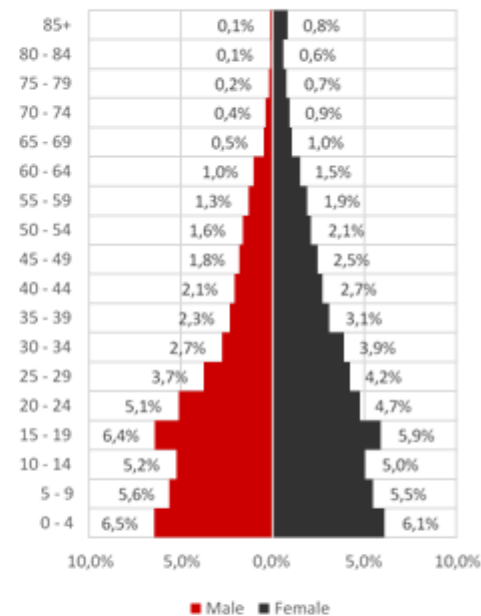
MALE

50.1%

of the population is

FEMALE

MAKHADO HOST MUNICIPALITY



46.8%

of the population is

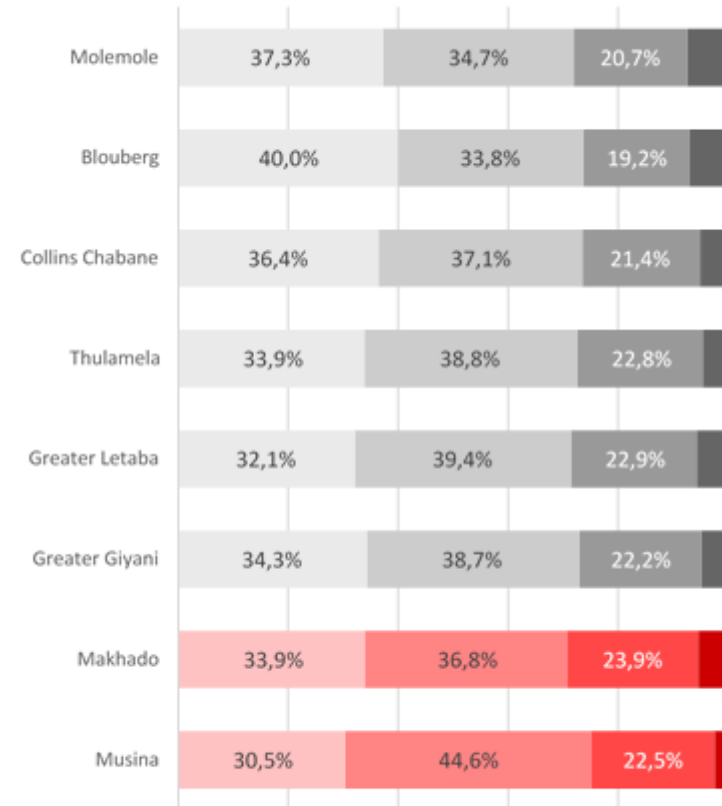
MALE

53.2%

of the population is

FEMALE

AGE PROFILE OF THE HOST AND SUPPORTING MUNICIPALITIES



■ Child (0 - 14) ■ Youth (15 - 34) ■ Working Age (35 - 64) ■ Elderly (65+)

DEMOGRAPHIC PROFILE OF HOST MUNICIPALITIES – AGE PROFILE

MUSINA HOST MUNICIPALITY

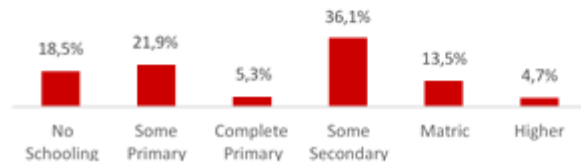
Educational Institution Attendance (20+ Years)

47.2%
attend a
SECONDARY
SCHOOL

23.7%
attend an
UNIVERSITY

19.9%
attend an
TVET

Highest Education Level



MAKHADO HOST MUNICIPALITY

Educational Institution Attendance (20+ Years)

38.6%
attend a
SECONDARY
SCHOOL

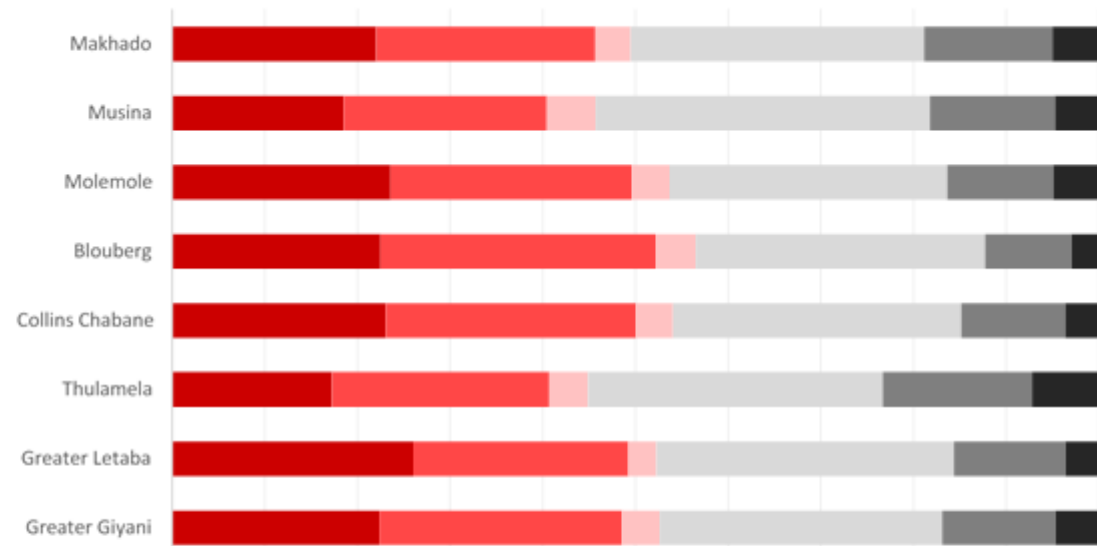
24.7%
attend an
TVET

22.0%
attend an
UNIVERSITY

Highest Education Level



HIGHEST LEVEL OF EDUCATION FOR THE HOST AND SUPPORTING MUNICIPALITIES



	Greater Giyani	Greater Letaba	Thulamela	Collins Chabane	Blouberg	Molemole	Musina	Makhado
No Schooling	22,4%	26,0%	17,2%	23,0%	22,5%	23,6%	18,5%	22,0%
Some Primary	26,2%	23,3%	23,4%	27,0%	29,7%	26,0%	21,9%	23,7%
Complete Primary	4,1%	3,0%	4,2%	4,0%	4,3%	4,1%	5,3%	3,8%
Some Secondary	30,5%	32,1%	31,8%	31,1%	31,2%	30,0%	36,1%	31,7%
Matric	12,2%	12,0%	16,1%	11,2%	9,3%	11,4%	13,5%	13,8%
Higher	4,7%	3,6%	7,2%	3,6%	2,9%	4,9%	4,7%	5,0%

DEMOGRAPHIC PROFILE OF HOST MUNICIPALITIES - OCCUPATION PROFILE

MUSINA HOST MUNICIPALITY

OCCUPATION PROFILE

Skilled Occupations
11.8%



Semi-Skilled Occupations
45.1%



Low-Skilled Occupations
42.3%



ELEMENTARY OCCUPATIONS ARE MOST POPULAR
42.3%

SERVICE WORKERS AND MARKET SALES WORKERS ARE THE SECOND MOST POPULAR
17.1%

CRAFT AND RELATED TRADES ARE THE THIRD MOST POPULAR
11.5%

MAKHADO HOST MUNICIPALITY

OCCUPATION PROFILE

Skilled Occupations
22.2%



Semi-Skilled Occupations
42.5%



Low-Skilled Occupations
34.8%

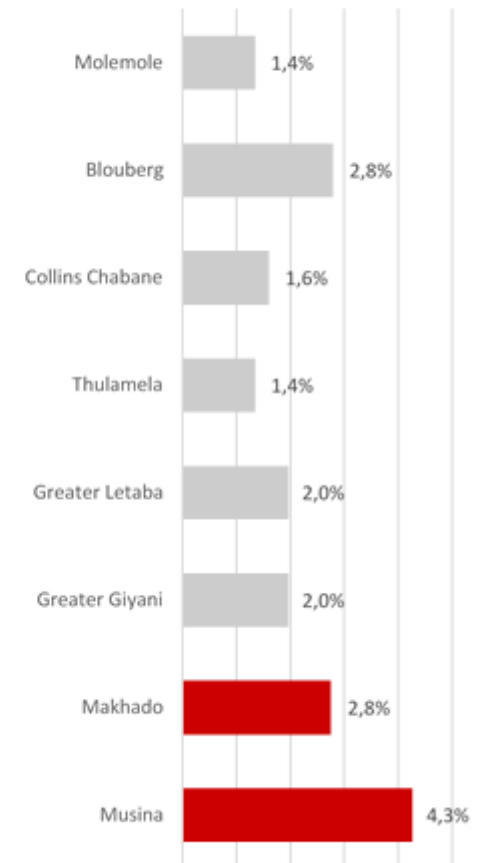


ELEMENTARY OCCUPATIONS ARE MOST POPULAR
34.8%

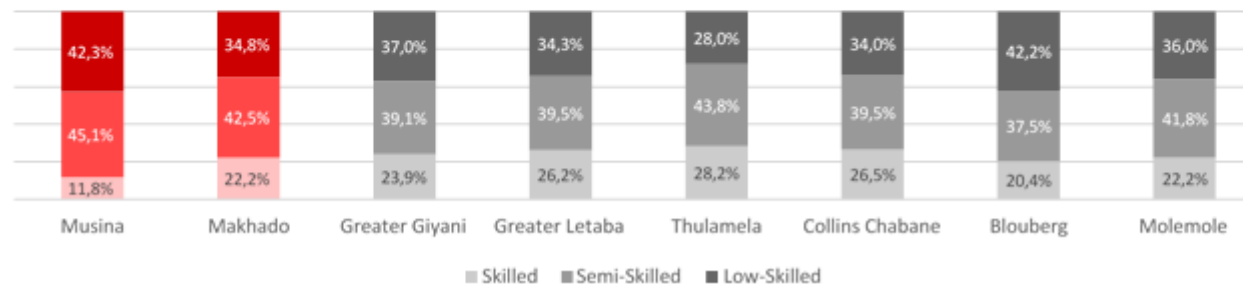
SERVICE AND MARKET SALES WORKERS ARE THE SECOND MOST POPULAR
15.7%

CRAFT AND RELATED TRADES ARE THE THIRD MOST POPULAR
15.2%

MANUFACTURING LABOURERS AS A PERCENTAGE OF ALL OCCUPATIONS IN THE HOST AND SUPPORTING MUNICIPALITIES



SKILLS PER HOST AND SENDING MUNICIPALITY



DEMOGRAPHIC PROFILE OF HOST MUNICIPALITIES – EMPLOYMENT PROFILE AND LABOUR ABSORPTION

MUSINA HOST MUNICIPALITY

ECONOMICALLY
ACTIVE
Population
67.4%



32.4% Not-Economically Active

MAKHADO HOST MUNICIPALITY

ECONOMICALLY
ACTIVE
Population
45.3%



54.7% Not-Economically Active

Economically active population refers to a person of working age 15 to 65 who are either employed or unemployed. Not economically active population refers to ages 0 to 14 and 65 and older, persons unable to work or persons engaged in educational activities or are home-makers.



Employed
Economically
Active
80.1%

Unemployed
Economically Active
19.9%

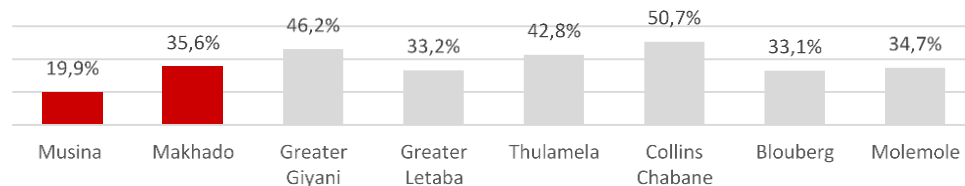


Employed
Economically
Active
64.4%

Unemployed
Economically Active
35.6%

Employed and unemployed persons are considered to be economically active and thus is a segment of the economically active percentage.

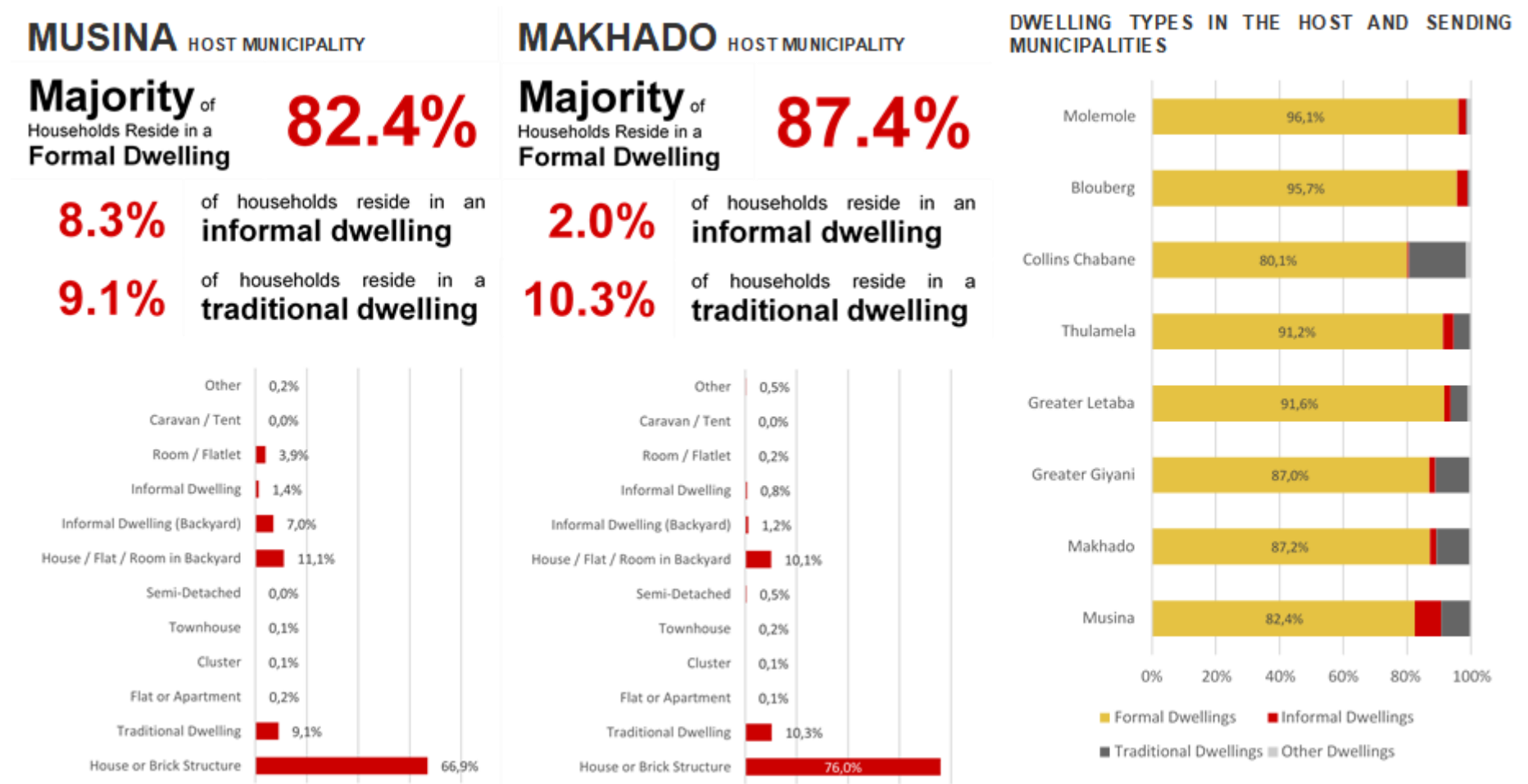
UNEMPLOYMENT RATE OF THE HOST AND SUPPORTING MUNICIPALITIES



LABOUR ABSORPTION PROFILE

	LABOUR ABSORPTION RATE	AVERAGE NUMBER OF NEW ECONOMICALLY ACTIVE POPULATION PER YEAR	AVERAGE NUMBER OF NEW JOBS CREATED PER YEAR	EFFECT
Musina	55,6	1 299	203	UNDERSUPPLY OF JOBS
Makhado	30,0	4 231	517	UNDERSUPPLY OF JOBS
Greater Giyani	20,2	1 378	108	UNDERSUPPLY OF JOBS
Greater Letaba	29,1	1 139	-92	UNDERSUPPLY OF JOBS
Thulamela	24,3	5 588	647	UNDERSUPPLY OF JOBS
Collins Chabane	18,8	801	92	UNDERSUPPLY OF JOBS
Blouberg	23,5	-285	-194	LABOUR FORCE AND JOBS DECLINING
Molemole	32,0	-101	-173	LABOUR FORCE AND JOBS DECLINING

DEMOGRAPHIC PROFILE OF HOST MUNICIPALITIES – DWELLING TYPOLOGIES



DEMOGRAPHIC PROFILE OF HOST MUNICIPALITIES – TENURE STATUS

MUSINA HOST MUNICIPALITY



33.1%

of households **own** and have **paid** for the property where they reside

10.9%

of households **own** but have **not finished paying** for the property where they reside

40.5%

of households **rent** the property where they reside

15.5%

of households **occupy** the property where they reside **rent free**

MAKHADO HOST MUNICIPALITY



75.2%

of households **own** and have **paid** for the property where they reside

5.3%

of households **own** but have **not finished paying** for the property where they reside

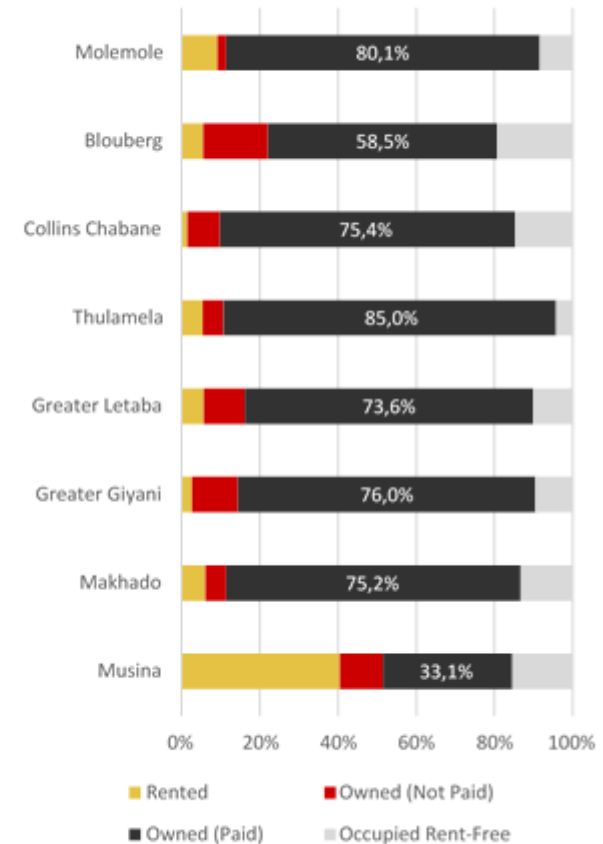
6.1%

of households **rent** the property where they reside

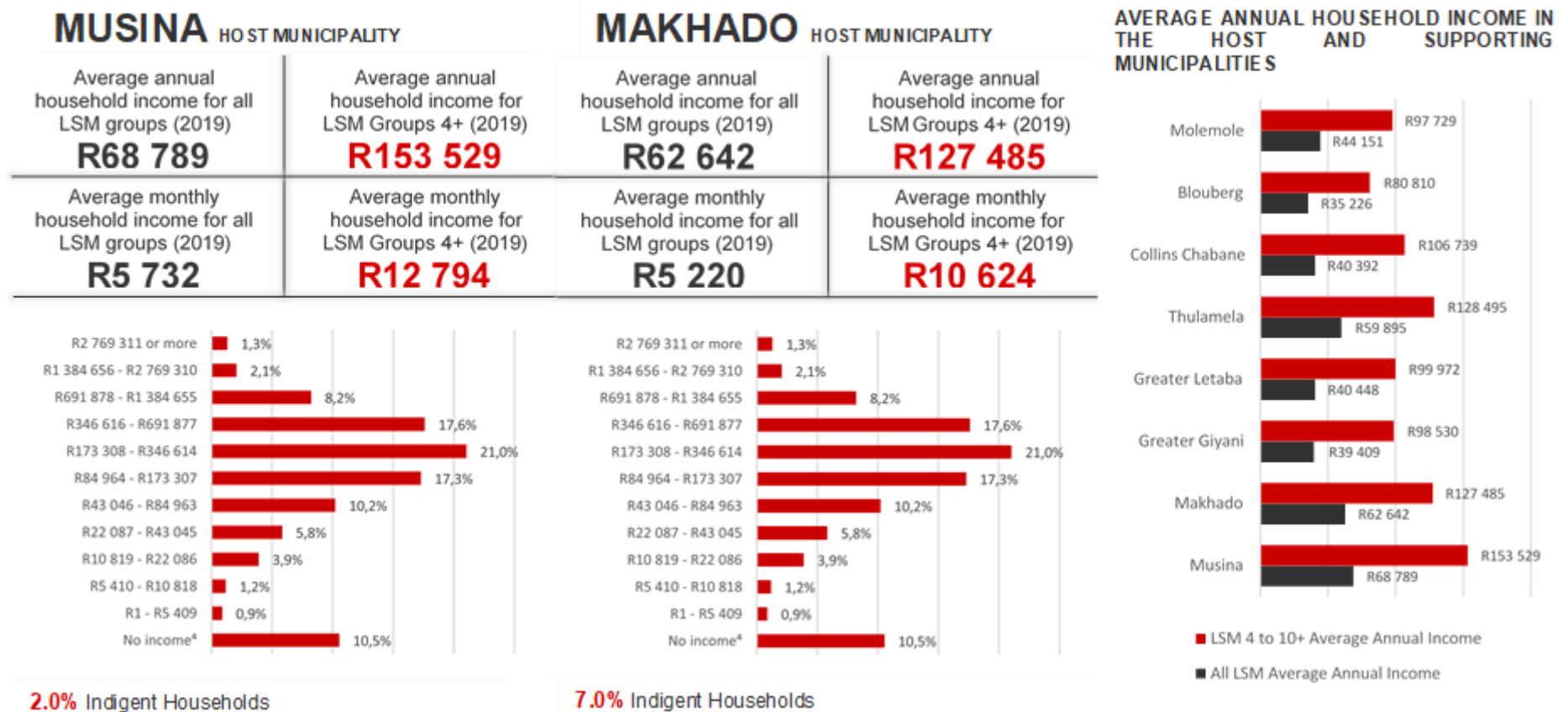
13.4%

of households **occupy** the property where they reside **rent free**

TENURE TYPOLOGY IN THE HOST AND SENDING MUNICIPALITIES

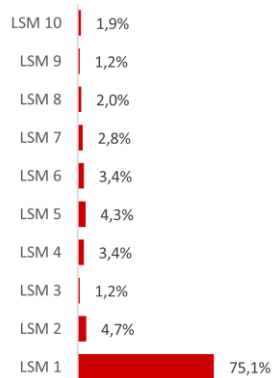


DEMOGRAPHIC PROFILE OF HOST MUNICIPALITIES – AVERAGE ANNUAL HOUSEHOLD INCOME



DEMOGRAPHIC PROFILE OF HOST MUNICIPALITIES – LIVING STANDARD MEASUREMENT

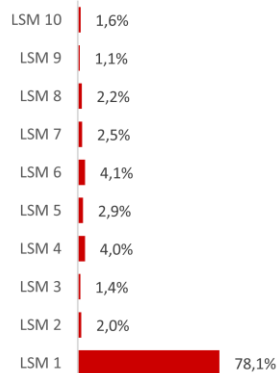
MUSINA HOST MUNICIPALITY



LSM 1 to 3 are the **most** prevalent group in the **Musina Municipality**

LSM 8 to 10 are the **least** prevalent

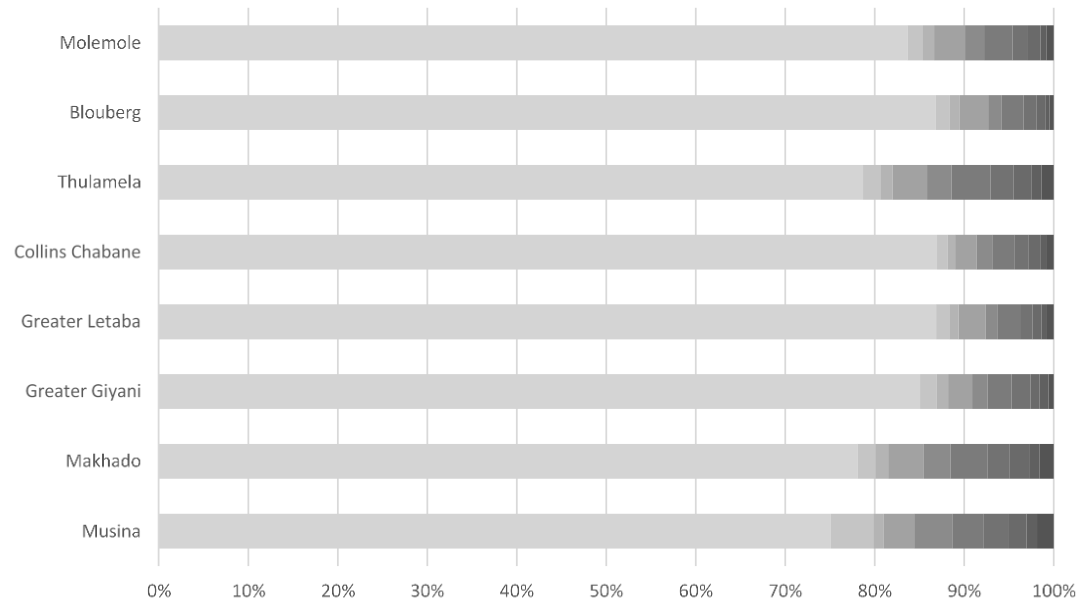
MAKHADO HOST MUNICIPALITY



LSM 1 to 3 are the **most** prevalent group in the **Makhado Municipality**

LSM 8 to 10 are the **least** prevalent

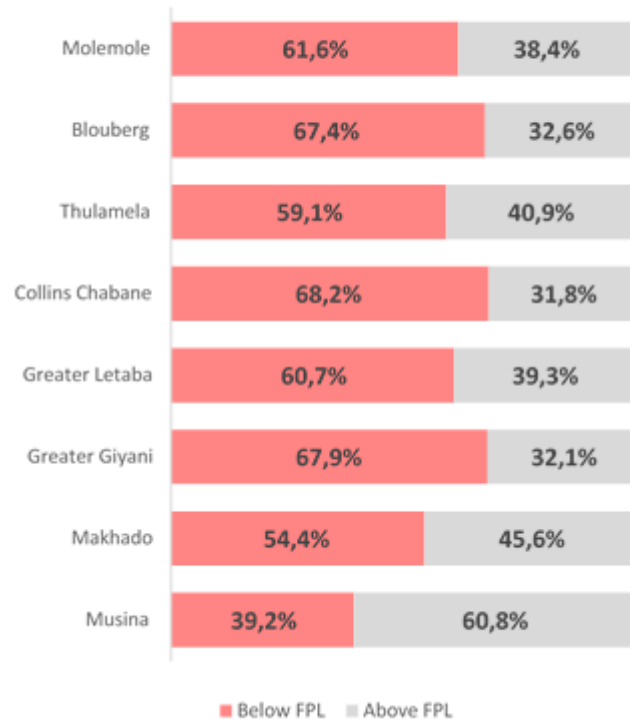
LIVING STANDARD MEASURE IN THE HOST AND SUPPORTING MUNICIPALITIES



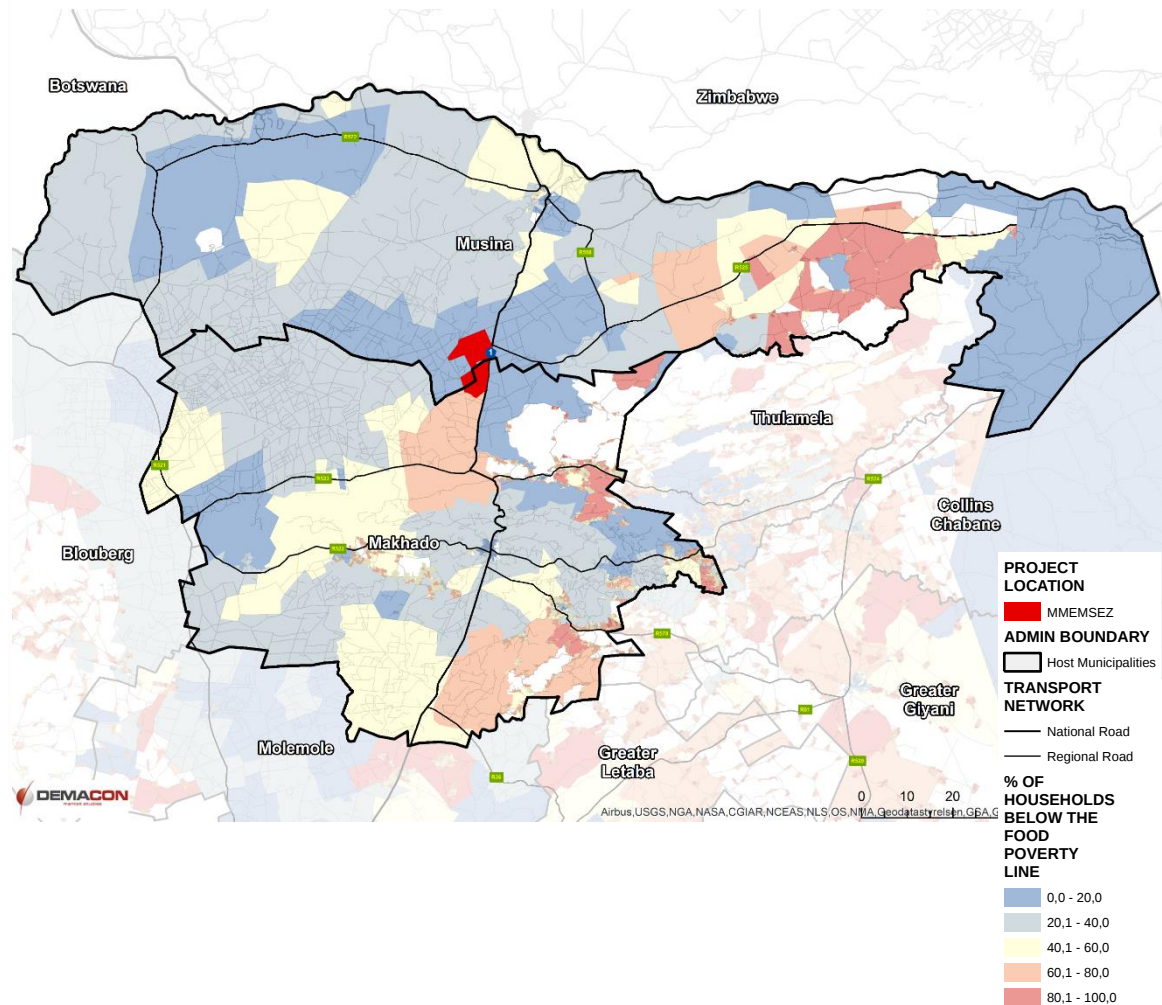
	Musina	Makhado	Greater Giyani	Greater Letaba	Collins Chabane	Thulamela	Blouberg	Molemole
LSM 1	75,1%	78,1%	85,1%	86,9%	87,0%	78,7%	86,8%	83,7%
LSM 2	4,7%	2,0%	1,8%	1,5%	1,2%	1,9%	1,6%	1,7%
LSM 3	1,2%	1,4%	1,3%	1,1%	0,8%	1,4%	1,1%	1,2%
LSM 4	3,4%	4,0%	2,7%	3,0%	2,4%	3,9%	3,2%	3,5%
LSM 5	4,3%	2,9%	1,7%	1,4%	1,8%	2,7%	1,5%	2,1%
LSM 6	3,4%	4,1%	2,7%	2,5%	2,4%	4,4%	2,5%	3,2%
LSM 7	2,8%	2,5%	2,1%	1,4%	1,5%	2,5%	1,5%	1,7%
LSM 8	2,0%	2,2%	1,0%	1,0%	1,4%	2,1%	1,0%	1,4%
LSM 9	1,2%	1,1%	1,0%	0,6%	0,6%	1,1%	0,4%	0,7%
LSM 10	1,9%	1,6%	0,6%	0,8%	0,8%	1,4%	0,5%	0,8%

DEMOGRAPHIC PROFILE OF HOST MUNICIPALITIES – POVERTY PROFILE

PROPORTION OF HOUSEHOLDS IN THE HOST AND SENDING MUNICIPALITIES ABOVE AND BELOW THE FOOD POVERTY LINE OF THE LIMPOPO PROVINCE



POVERTY PROFILE OF THE HOST MUNICIPALITIES



BURDEN OF DISEASE

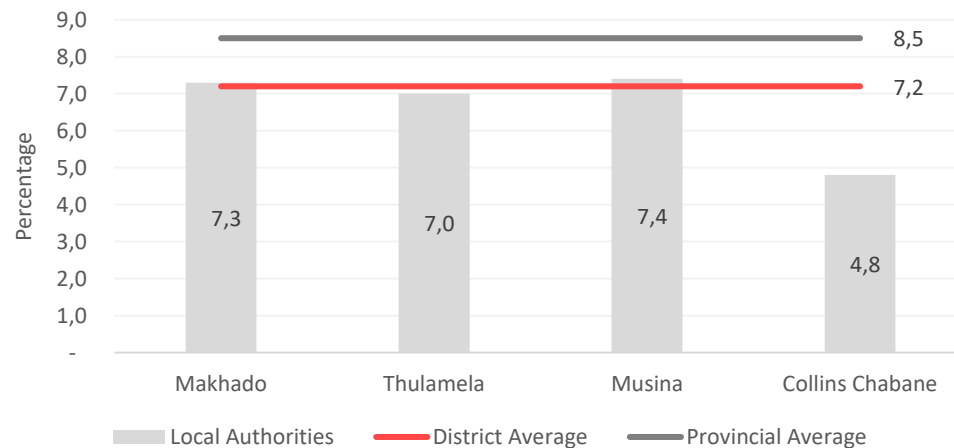
Burden of disease data represents information which highlights the extent to which the leading causes of pre-mature death in health districts across South Africa can be reviewed. According to the District Health Barometer (2019/20) the proportions of deaths and years of life lost (YLLs) due to four broad cause groups (Communicable diseases, HIV-related and TB, Non-communicable diseases, and injuries) were calculated for each of the 52 districts. 'Years of life lost' is a measure of premature mortality based on the age at death and thus highlights the causes of death that should be targeted for prevention. In line with the second South African NBD study, the West level 26 model life expectancy was selected as the standard against which YLLs are calculated. The proportion of all deaths that are amenable to healthcare were also calculated for each district.

Figure 1.1: Percentage of Deaths by Broad and Leading Cause – 2012 to 2017

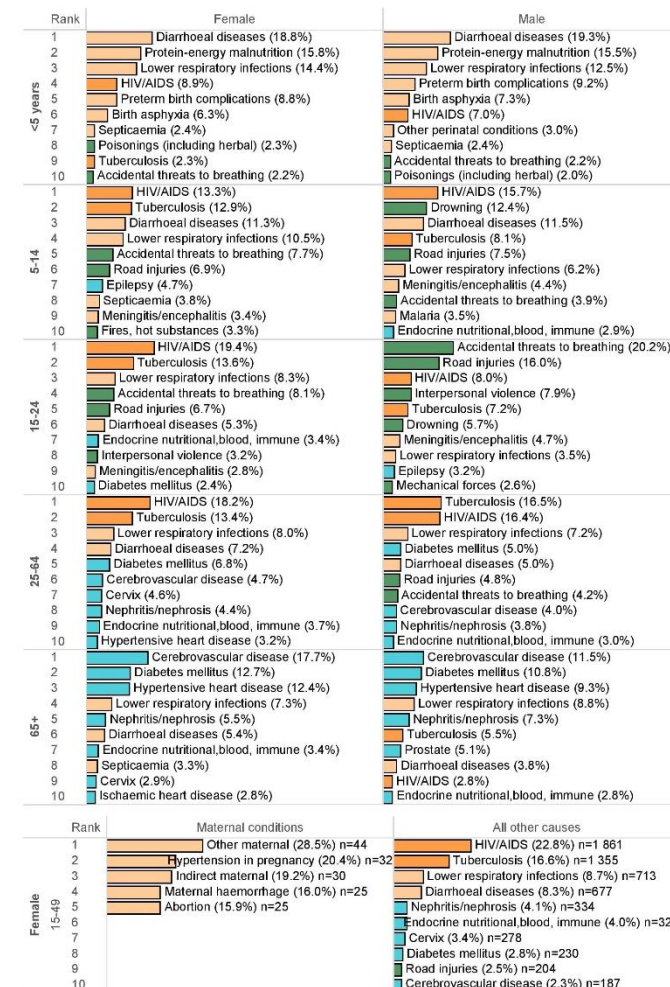


Source: DEMACON ex DHB, 2020

Average Percentage of People Covered by Medical Insurance



Source: DEMACON ex DHB, 2020



INDUSTRIAL LOCATION FACTORS AND BUILDING BLOCKS

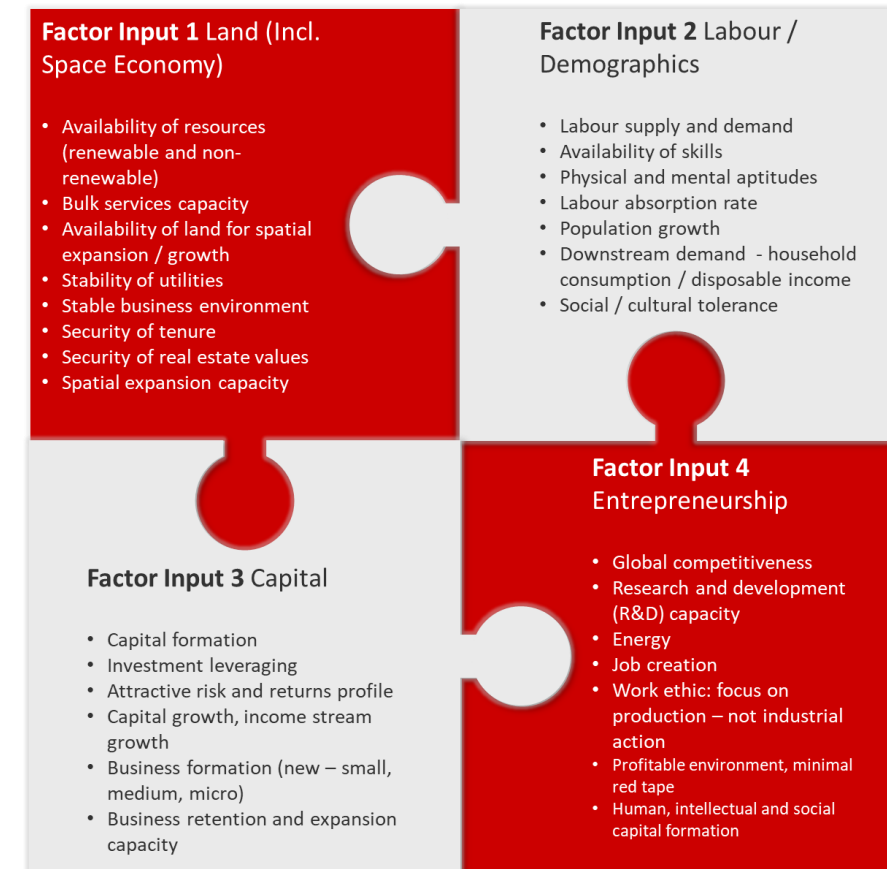
In the context of the MMEMSEZ it is necessary to consider the factors that could influence the sustainability of the development as well as locational factors that should be considered when establishing an industrial related development.

When considering the sustainability of an industrial development, four key factors are essential inputs to ensure the long-term viability of a project. The factors relate to multiple elements across hard and soft infrastructure requirements and social and economic inputs that support and grow industrial activities.

The building blocks for sustainable development include:

- ✓ **Land and the space economy**
 - considering the availability of resources and bulk infrastructure, the potential to expand proposed operations in the future, the extent and stability of not only the business environment but the supply of utilities and property markets.
- ✓ **Labour and demographic profiles**
 - considering the availability of labour and the extent to which the local labour force has sufficient skills to support proposed operations, the degree to which local demographic trends change and shape the local community profile and the livelihoods of local communities.
- ✓ **Capital investment**
 - considering the potential for capital formation through operations and the leveraging of investment, the effectiveness of operations to sustain capital growth and encourage local value chain development, and the expansion capacity of the local economy to accommodate new businesses.
- ✓ **Entrepreneurship growth**
 - considering the local and international competitiveness of the national economy and local operations, the potential to ensure job creation and labour force work ethic and the growth of human capital through social investment.

BUILDING BLOCKS TO SUSTAINABLE DEVELOPMENT



INDUSTRIAL LOCATION FACTORS AND BUILDING BLOCKS

Location factors specific to the context of industrial development are important to identify industrial activities that are located in different socio-economic and spatial localities. Industrial location factors can be considered based on two variables, the first being traditional and the second contemporary.

- ✓ **Traditional location factors** consider the positioning of an industrial development in regard to its proximity to resources, accessibility to markets, the potential to agglomerate and the availability of logistical infrastructure.
- ✓ **Contemporary location factors** consider the availability of utilities and the easy and stability of accessing these services, the proximity of industry to secondary functions, the availability and proximity of industry to labour resources and the availability of financial incentives.

SUMMARY OF INDUSTRIAL LOCATION FACTORS

Economic Base	Description
Traditional Industrial Location Factors	
Resources	Proximity to natural resources and natural resources as the primary product.
Market	Natural resources are processed (beneficiated) to create final and intermediate products.
Agglomeration	Products created as a result of input from different industries located within proximity to each other (clustering industrial activities).
Logistics	Activity located based on its demand for logistics as its primary consideration – connectivity and movement dependent.
Contemporary Location Factors	
Electricity (Utility) Orientation	Industry's location based on the accessibility of utilities such as water and electricity.
Amenity Orientation	Industry's location based on its secondary function – adding value to quality of life, research and development, etc.
Labour	Cheap, reliable or stable labour
Incentives	Financial incentives.

Based on previous information it becomes apparent that the MMEMSEZ is traditionally positioned in regard to:

- ✓ its proximity to **natural resources** whereby many of the input resources required to operate the SEZ are primarily found in the northern mining belt,
- ✓ the potential to create an **agglomerated economic node** through the development of multiple supportive metallurgical activities within the SEZ, and
- ✓ the **proximity to major logistical routes** and inland border trade areas such as the N1 highway, Beitbridge and Pont Drift Border Posts and the railway line between Beitbridge and Gauteng and Nelspruit / Matsulu.

The SEZ is also contemporarily positioned in regard to:

- ✓ its **amenity orientation** whereby the SEZ could generate significant changes to the quality of life of local communities in the Musina and Makhado area,
- ✓ the **availability of labour** is prominent but could be influenced by mismatched labour force skills, and
- ✓ the **financial incentive** proposition of the SEZ additionally assists with the attractiveness of the SEZ.

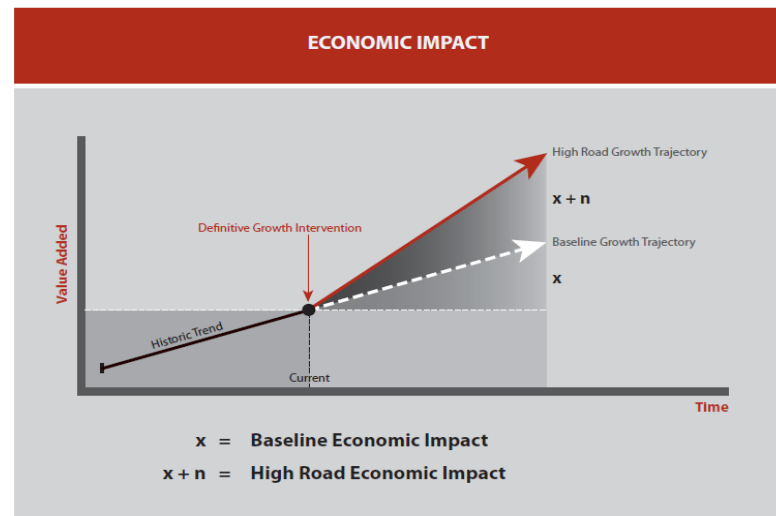
QUANTITATIVE IMPACT ANALYSIS – METHODOLOGY

The input-output model depicts economic relationships between different components of an economy by identifying monetary flows (expenditures, receipts) between various units. The relationship between the initial spending and the total effects generated by the spending is known as the multiplier effect ($X + N$) of a sector, or more generally as the impact of a sector on the economy as a whole.

Impacts are measured in terms of the following:

- ✓ **Business sales** refers to the value of business sales (turnover) generated in the economy as a result of the mine.
- ✓ **GGP** refers to the value of all final goods and services produced during a one-year period within the boundaries of a specific area as a result of the mine.
- ✓ **Total employment** reflects the number of additional jobs created by economic growth due to the mine. Note that the public costs of attracting these employment opportunities, as well as the quality thereof, are not necessarily reflected.

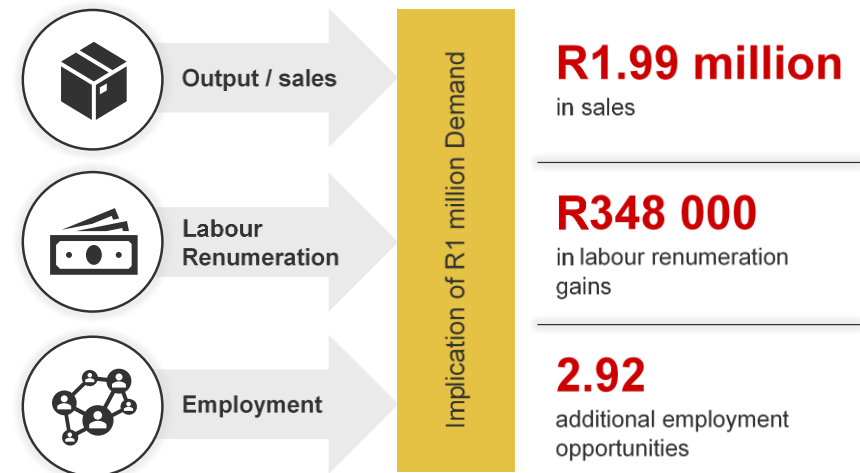
ECONOMIC IMPACT OF DEVELOPMENT



The impact result due to a change in output is measured through national multipliers. The multiplier effect refers to the increase in final income arising from any new injection of demand and the opposite is also true with a withdrawal of demand will lead to a downward multiplier effect. The following is evident for manufacturing of iron and steel products within the Limpopo Province.

- ✓ **Output/Sales:** For every R1 million in final demand from metallurgical production there is R1.99 million downstream variation in output/sales generated across the entire economy.
- ✓ **Labour Remuneration:** For every R1 million variation in final demand, labour remuneration either loses or gains R348 000.
- ✓ **Employment:** A total of 3 employment opportunities are created within the formal and informal sectors across the entire economy due to a R1 million variation in metallurgical demand.

MULTIPLIER EFFECT OF THE METALLURGICAL MANUFACTURING INDUSTRY



QUANTITATIVE IMPACT ANALYSIS – CONSTRUCTION AND OPERATIONAL

- ✓ A **capital investment amount of R287.6 billion** could be injected to implement the MMEMSEZ.
- ✓ The annual business sales of the MMEMSEZ could obtain **R435.5 billion**.
- ✓ A total of **53 800 jobs** (47 694 employees sourced from the local market) could be created at full operational capacity.
- ✓ The capital investment and annual output variables have been derived from a US Dollar value (supplied in the Internal Master Plan - 2019).
- ✓ A South African Rand value is derived by making use of a R14.29 exchange rate – the exchange rate is determined by making use of the average median exchange rate between the US Dollar and South African Rand between August 2018 and August 2019.

CONSTRUCTION AND OPERATIONAL PHASE QUANTITATIVE IMPACT ANALYSIS

CONSTRUCTION PHASE IMPACTS				OPERATIONAL PHASE IMPACTS			
 ESTIMATED SEZ CAPITAL INVESTMENT ± R 287.6 billion				 ESTIMATED SEZ ANNUAL SALES REVENUE ± R 435.5 billion			
 ADDITIONAL BUSINESS SALES				 ADDITIONAL BUSINESS SALES			
 Direct Impact R411,4 billion	 Indirect Impact R61,9 billion	 Induced Impact R100,4 billion	 Total Impact R573,7 billion	 Direct Impact R623,1 billion	 Indirect Impact R93,7 billion	 Induced Impact R152,0 billion	 Total Impact R868,8 billion
 ADDITIONAL GGP				 ADDITIONAL GGP			
 Direct Impact R124,0 billion	 Indirect Impact R26,8 billion	 Induced Impact R44,6 billion	 Total Impact R195,4 billion	 Direct Impact R187,8 billion	 Indirect Impact R40,5 billion	 Induced Impact R67,5 billion	 Total Impact R295,9 billion
 ADDITIONAL EMPLOYMENT				 ADDITIONAL EMPLOYMENT			
 Direct Impact 492 651 jobs	 Indirect Impact 107 011 jobs	 Induced Impact 239 103 jobs	 Total Impact 838 765 jobs	 Direct Impact 746 111 jobs	 Indirect Impact 162 066 jobs	 Induced Impact 362 117 jobs	 Total Impact 1 270 294 jobs

OTHER QUANTIFIABLE IMPACT ANALYSIS

Based on the extent and size of the MMEMSEZ, the range of impacts that could be generated by the SEZ is expansive. As a result, a number of key impacts have been identified that should be considered alongside the quantitative impact of the initial investment and operation of the SEZ. Other quantifiable impacts that have been identified for analysis include:

- ✓ The impact of direct employment created by the SEZ on the tax revenue of South Africa, and
- ✓ The impact of the SEZ on the local tourism industry.

MMEMSEZ EMPLOYEES IMPACT ON INCOME TAX REVENUE

The direct employment generated by the MMEMSEZ (i.e. 53 800 jobs) could have a substantial impact on the additional revenue generated by the South African Revenue Service (SARS) through taxes on employee remuneration.

In order to determine the potential impact that could be generated, the following assumptions have been applied:

- ✓ Assumed monthly employee income per employment type:
 - Executive positions – R25 000 per month
 - Professional positions – R15 000 per month
 - General labour positions – R8 000 per month.
- ✓ The SARS taxation brackets of the 2019/20 financial year have been applied, and
- ✓ The calculation does not consider non-taxable benefits that employees may be afforded.

	Executive Positions	Professional Positions	General Labour
Employee Structure			
Number of Employees	6 994	4 842	41 964
Gross Monthly Remuneration (per Employee)	R25 000.00	R15 000.00	R8 000.00
Total Monthly Personal Income Tax (per Employee)	R4 158.05	R1 663.72	R335.00
Total Income Tax Revenue (Annual)	R348 976 820	R96 668 787	R168 695 280
Total Income Tax All Employees (Annual)			R614 340 887

IMPACT OF THE MMEMSEZ ON THE LOCAL TOURISM INDUSTRY

The immediate area (i.e. 30 km radius from the SEZ) is primarily rural in nature, dominated by farms and wilderness areas. The inclusion of a heavy industrial node the scale of the MMEMSEZ impacts on the natural environment and by extension tourism activities.

Assuming that tourist facilities within a ± 30 km radius of the SEZ have a 100% occupancy rate per month, only domestic tourists are taken into consideration and R1 152 income is generated per night of stay, tourist facilities have the potential to generate in excess of **R56.86 million p/yr**.

The tourism industry can also be reviewed in terms of the catering and accommodation sector (associated with the tourism industry)

Item	Musina	Makhado
Catering and Accommodation Sector GVA (R/million)	R74.98	R194.96
Average Annual Growth Rate	2.7%	0.6%
Contribution to Total Economic Output	1.4%	0.9%

Although leisure tourists may be affected by the MMEMSEZ, business tourism may increase. Overnight business trips to the Limpopo Province are limited whilst day trips represent 3.97% of all day trips. Thus, due to the business environment of the SEZ, trips to and from the SEZ may increase from not only domestic but foreign business tourists. Revenue potential from leisure tourists would be diminished even though business tourism may supplement some of the revenue lost – business tourists typically have shorter number of bed nights as appose to leisure tourists.

QUALITATIVE IMPACT ASSESSMENT - METHODOLOGY

The evaluation of impacts is conducted in terms of a set of fixed criteria. The various socio-economic impacts and benefits of this project is discussed in terms of the status, extent, duration, probability, and magnitude of the impact. Finally, an accumulative impact and significance rating is applied to rate each identified impact in terms of its overall magnitude and significance.

In order to adequately assess and evaluate the impacts and benefits associated with the project it was necessary to develop a methodology that would scientifically achieve this and reduce the subjectivity involved in making such evaluations.

For informed decision making it is necessary to assess all legal requirements and clearly defined criteria in order to accurately determine the significance of the predicted impact or benefit on the surrounding social environment.

The nature or status of the impact is determined by the conditions of the environment prior to construction and operation. A discussion on the status of the impact will include a description of what causes the effect, what will be affected and how it will be affected. The status of the impact can be described as negative, positive or neutral.

The following provides an outline and overview of the methodological elements described above. The outline and overview forms part of the overall qualitative impact assessment and is compiled into a singular feature which outlines the identified impact, its assessment based on the methodological elements and potential mitigation measures that can be considered.

IMPACT SIGNIFICANCE ITEM						
Status of the impacts	Positive +		Neutral N		Negative —	
Extent of the impact	Site Specific (1)	Local (2)	Provincial / Regional (3)	National (4)	Internationally (5)	
Duration of the impact	Immediate (1)	Short-Term (2)	Medium-Term (3)	Long-Term (4)	Permanent (5)	
Magnitude of the impact	None (0)	Low (1)	Medium - Low (2)	Medium (3)	Medium - High (4)	Very High / Don't Know (5)
Probability of the impact	No Occurrence (0)	Minor Possibility of Occurrence (1)	Possible Occurrence (2)	Likely Occurrence (3)	Expected Occurrence (4)	Will Occur (5)
Impact Rating	No Impact 0	Low 1 - 15	Low to Medium 16 - 30	Medium 31 - 45	Medium to High 46 - 60	High 60+

QUALITATIVE IMPACT ASSESSMENT - OVERVIEW

The following provides a broad and concise overview of potential impacts that could arise from the MEMSEZ during the construction and operational phase. The purpose is to outline the basis and extent of potential impacts so as to guide further detailed analysis.

The extent of potential impacts as a result of the construction and operation of the SEZ is diverse and across multiple core themes. The core themes under which potential qualitative impacts are identified consist of:

- ✓ Impacts on the **local and/or regional economy**,
- ✓ Impacts on **local communities**,
- ✓ Impacts on the **local labour force**,
- ✓ Impacts on the **natural environment**,
- ✓ Impacts on **local infrastructure and utility services**, and
- ✓ Impacts on the **local property market**.



QUALITATIVE IMPACT ASSESSMENT – CONSTRUCTION PHASE

Impact	Status of Impact	Impact Significance Prior to Mitigation	Impact	Status of Impact	Impact Significance Prior to Mitigation
Increased demand for products and services from local businesses (e.g. retail, entertainment, accommodation, construction, etc)	+	35 Medium	Local construction sector value chain limitations – supply side constraints	—	20 Medium
Opportunity to expand local businesses through production, capacity and sales (e.g. construction, manufacturing, retail, etc.) or the establishment of new businesses	+	45 Medium	Short- to medium-term employment opportunities (Job creation across the skills spectrum)	+	45 Medium
Localised labour supply side constraint (in terms of quantity and quality of requisite skills)	—	28 Low - Medium	Local labour supply side constraints to be met through “importation” of labour	—	24 Low - Medium
Increased pressure hard infrastructure (e.g. roads, electricity, etc.) – increased maintenance burden and new investment	—	40 Medium	Temporary increase of household income	+	45 Medium
Increased daily loads on the local transportation network to transport labour to and from the site (home to work and work to home commute)	—	28 Low - Medium	In-flux of employment seekers	—	35 Medium
Increased pressure on soft infrastructure (e.g. social amenities and services) - increased maintenance burden and new investment	—	28 Low - Medium	Increased risk that social ills could materialise	—	18 Medium
Relocation of affected communities	—	60 Medium - High	Introduction of industrial activities to natural environment	—	55 Medium - High
Partial loss of areas visual appeal and amenity value, in particular for tourism and accommodation activities	—	60 Medium - High	Impact on local property markets, i.e. diminished amenity value and increased property value	—	50 Medium - High
Impact of air, noise and soil quality on existing economic activities	—	40 Medium	Increased prospect of informal settlements	—	44 Medium
Increased demand for various land uses	+	32 Medium	Increased pressure on local healthcare sector	—	36 Medium
Increased burden of disease	—	36 Medium			

QUALITATIVE IMPACT ASSESSMENT – OPERATIONAL PHASE

Impact	Status of Impact	Impact Significance Prior to Mitigation	Impact	Status of Impact	Impact Significance Prior to Mitigation
Sustained demand for products and services from local businesses (e.g. retail, entertainment, accommodation, construction, etc)	+	55 Medium - High	Sustained increase of household income during the operational phase of the project	+	45 Medium
Local businesses supply side constraints to fulfil increased demand for products and services	—	50 Medium - High	Sustained pressure on soft infrastructure (e.g. social amenities and services) - increased maintenance burden and new investment	—	28 Low - Medium
Opportunities to expand local business base through production, capacity, and sales (e.g. construction, manufacturing, retail, etc.) or the establishment of new businesses	+	45 Medium	In-flux of employment seekers	—	40 Medium
Opportunity to develop backward and forward linking industries for the manufacturing sector, i.e. inputs to the manufacturing sector and sale of intermediate and final products	+	33 Medium	Sustained risk that social ills could materialise	—	18 Low - Medium
Diversification of the regional economy	+	52 Medium - High	Social investment by the SEZ into local communities	+	50 Medium - High
Opportunity to attract additional foreign and domestic investment to the local economy	+	50 Medium - High	Partial loss of areas visual appeal and amenity value, in particular for tourism and accommodation activities	—	55 Medium - High
Linkages to national SIP projects and areas	+	65 High	Impact of air, noise and soil quality on existing economic activities	—	65 High
Medium-term employment opportunities (Job creation across the skills spectrum) – includes direct, indirect and induced impacts as a result of the SEZ's operation.	+	50 Medium - High	Impact on local property markets, i.e. diminished amenity value and increased property value	—	50 Medium - High
Localised labour supply side constraint (in terms of quantity and quality of requisite skills)	—	28 Low - Medium	Sustained demand for new development (i.e. residential, retail, etc.)	+	36 Medium
Local labour supply side constraints to be mitigated through targeted skills development of local communities	+	40 Medium	State revenue potential through additional rates and taxes (to address inter alia infrastructure supply and maintenance demand)	+	44 Medium

QUALITATIVE IMPACT ASSESSMENT – OPERATIONAL PHASE

Impact	Status of Impact	Impact Significance Prior to Mitigation	Impact	Status of Impact	Impact Significance Prior to Mitigation
Local labour supply side constraints to be mitigated through targeted skills development of local communities	—	55 Medium - High	Increased prospect of informal settlements	—	36 Medium
Sustained pressure hard infrastructure (e.g. roads, electricity, etc.) – increased maintenance burden and new investment	—	55 Medium - High	Speculative pricing activity in nearby towns can be expected	+	36 Medium
Increased daily loads on the local transportation network to transport labour to and from the site (home to work and work to home commute)	—	36 Medium	Increased burden of disease	—	40 Medium
Increased pressure on local healthcare sector	—	40 Medium	Improved access to healthcare	+	36 Medium

SOCIO-ECONOMIC IMPACT ASSESSMENT CONCLUSION

The relatively small size of the manufacturing sector in the Limpopo Province poses an opportunity by the Musina-Makhado SEZ to create local, national, provincial and socio-economic gains.

The SEZ and its intended operations are positioned to play a substantial role in the growth and diversification of the economy (local, regional and national) by introducing mineral beneficiation in the metals and ferro-alloys industries (an industry that is limited in the province). The SEZ is set to become the first operational special economic zone in the province and is positioned to agglomerate supportive and down-stream industries into the local, regional and international markets.

The SEZ is positioned to create considerable economic and social impacts. The proposed operations of the SEZ could, through leveraging of the economic multiplier effect, potentially create up to 4.4 jobs for every R1 million capital invested. In addition to the estimated 52 000 on-site employment opportunities to be created by the SEZ, approximately 838 000 new employment opportunities could be created during the entire construction phase (10 year-period) and up to 1.2 million new operational phase jobs created and sustained (at maturity and full capacity).

The additional business sales that could be created by the SEZ during construction phase of the project amounts to more than R573 billion whilst the operational phase additional sales created and sustained could account for more than R868 billion. Additional GGP created during the construction phase (10-year period) could amount to more than R195 billion and during the operational phase a total of approximately R295 billion additional GGP could be created and sustained annually.

Aside from the direct impact generated by capital and operational expenditures, various local socio-economic impacts could be created. Its common cause that nearby communities are tribal in nature and that skills levels are low. The labour requirements of the SEZ in general and those of its future operators in particular, need to be timeously identified to ensure optimal alignment by local training and recruitment initiatives – and to minimise the need for imported labour.

The magnitude of capital investment anticipated could potentially create considerable demand and supply side impacts. The fairly rapid nature of the scale of investment planned over a fairly focused timeframe will create considerable demand and supply side pressures. Proper planning will be required to ensure that labour force settlement and associated community development takes place in a structured manner and that demand side responses are timeously implemented in a phased manner – including but not limited to land for human settlement, formal housing initiatives and associated development of ancillary facilities such as retail, recreation, healthcare, education, banking, policing, etc.

The increased livelihoods of local communities also affect the demand for socio-economic services. The increased spending potential of local communities allow for the growth in demand for additional services and directly influences the growth of new businesses. It should be noted that although a significant number of employment opportunities could be generated, these opportunities are not instantaneous but progressive over time. Independent studies indicate that the sphere of influence generated by a SEZ diminishes as the distance from the SEZ core increases. Agglomeration of economic activities in support of the SEZ would augment the impact created by the SEZ.

The influx of labour to the area is set to stimulate various demand and supply side impacts. The prospect of job opportunities would fuel considerable in-migration to the area, thereby creating a myriad of impacts on economic infrastructure, including hard as well as soft infrastructure. Hard infrastructure includes road, rail, water sanitation, electricity. Soft infrastructure includes the full spectrum of social facilities and amenities including but not limited to hospitals, police stations, libraries, home affairs offices, community halls, post offices, cemeteries, schools and creches, sports facilities, active and passive recreational spaces, resources centres. Well-structured supply side responses need to be in place to ensure orderly development - the SEZ development will be accompanied by extensive infrastructure upgrades and investments. As with any large scale development, there is a risk that social ills could materialise. – informal settlements, sex workers, STD's, communicable diseases, HIV/AIDS, TB, crime. Proper planning for orderly human settlement could mitigate the likelihood of these risks materialising.

The area reveals a particular burden on diseased, characterised by the following:

- ✓ Age groups younger than 5 years
 - The leading cause of death for the age cohort is characterised by communicable diseases that exclude HIV and TB and maternal, perinatal and nutritional disorders (71% of deaths).
 - Leading causes include diarrhoeal diseases, protein-energy malnutrition and lower respiratory infections.
- ✓ Age groups 5 to 14 years
 - The leading cause of death for the age cohort is characterised by communicable diseases that exclude HIV and TB and maternal, perinatal and nutritional disorders (71% of deaths) and HIV-related and TB (24%).
 - Leading cases include HIV?AIDS (13 to 15%), Tuberculosis (8 to 13%) and Diarrhoeal diseases (11% to 12%).
- ✓ Age groups 15 to 24 years
 - The leading cause of death for females are HIV-related and TB causes (31% of deaths). The leading cause of death amongst males in the age cohort are as a result of injuries (54% of deaths).
 - Females within the age cohort are primarily affected by HIV/AIDS and Tuberculosis, whilst males are primarily affected by Accidental Threats to Breathing and Road Injuries.
- ✓ Age groups 25 to 64 years
 - The leading cause of death within the age cohort includes non-communicable diseases (36% to 42%) and HIV-related and TB (32% to 33%) causes.
 - Male and female population within the age cohort are primarily affected by HIV/AIDS (16% to 18%), Tuberculosis (13% to 16%) and lower respiratory infections (7% to 8%). Diabetes is the primary on-communicable disease affecting the age cohort.
- ✓ Age groups 65 and older
 - The leading cause for death in the age cohort is non-communicable diseases (72% to 77%).
 - Leading cases affecting population in the age group include cerebrovascular disease (11% to 17%), diabetes (10% to 12%) and hypertension heart disease (9% to 12%).

On average, approximately 8.5% of people in the Limpopo Province have access to a medical aid scheme. When considering the Vhembe District, the average proportion of people falls well below that provincial average (7.2%). The Musina and Makhado host communities on average have between 7.3% and 7.4% of people who are medically insured. The medical insurance deficit places a burden on public sector healthcare, and the capability of the healthcare system to lower the burden of disease. In light of the burden of disease, the Covid-19 virus does pose a risk in terms of community transmissions, the capability of local

healthcare systems, demand for related social amenities and the capability of local communities to earn a living given current economic conditions and lockdown regulations.

Local property markets could be impacted. Whereas SEZ activity could spur property market activity in nearby towns, the industrial nature of the SEZ could potentially diminish the amenity value of adjacent farms. Property owners adjacent to the SEZ could experience a decrease of market value while new developments in local towns could spur property values.

The construction and operation of the SEZ is likely to promote business and economic development in the local economy. The considerable additional job creation is set to create increased levels of disposable income and associated increases in buying power which, in turn, could create further downstream benefits in various value chains including retail, wholesale, education, healthcare, insurance, banking, real estate, recreation, travelling, export and imports, etc. – and associated rates and taxes. The extent to which these benefits are likely to materialise will, however, hinge on the model adopted. If domestic labour legislation is waived and labour is imported *en masse* (as has happened elsewhere in Africa where large industrial developments have been driven by not only by foreign investors and foreign developers) these benefits will, in all likelihood, not materialise to the same extent. Contract procurement for professional services as well as all labour procurement contracts would have to be managed with extreme care. The development of resource and labour requirement plans, well in advance could ensure optimal alignment between skills requirements and domestic skills supply. Lessons from elsewhere in Africa furthermore indicates that overcoming the language barrier would be a noteworthy challenge. Considerable effort would have to be made by the foreign investors/developers to ensure alignment with the dominant domestic language profile.

Procurement of services and labour from the South African market would greatly enhance economic (and social) spin-off effects of the SEZ. Where gaps in the domestic economy might exist in terms of specialised supply side expertise, new business development and skills transfer should be of utmost importance. As far as possible, down-stream beneficiation and value adding of raw materials should be encouraged to prevent the export of “cheap”, un-beneficiated raw materials, only to be re-imported in an expensive, beneficiated state.

A onerous skills development burden should be imposed on the foreign operator to ensure compliance with local labour and related legislation. Skills development and empowerment across the spectrum of South African communities, including minority groups, should be actively promoted. The use of foreign labour should be limited. Particular care should be taken during the operational phase to ensure that economic benefits are not eroded over time by systematically deteriorating environmental conditions – especially towards the end-of-life phase of mining and industrial plants. Proper decommissioning and rehabilitation plans should be timeously formulated. Stringent ongoing monitoring, evaluation and adjustment will be advisable.

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ABBREVIATIONS

EIA	Environmental Impact Assessment
FPL	Food Poverty Line
LEDA	Limpopo Economic Development Agency
MMEMSEZ	Musina-Makhado Energy and Metallurgy Special Economic Zone
SADC	Southern African Development Community
SEZ	Special Economic Zone

INTRODUCTION

1 INTRODUCTION

1.1 INTRODUCTION

DEMACON Market Studies were requested by the Limpopo Economic Development Agency (LEDA) to compile a **socio-economic impact assessment** as part of the **Scoping and Environmental Impact Reporting process** for the **Musina-Makhado Energy and Metallurgy Special Economic Zone (MMEMSEZ)**.

The proposed MMEMSEZ is located across the shared border between the **Musina and Makhado Local Municipalities** which fall under the Vhembe District Municipality in the Limpopo Province. The nearest towns are Makhado (located 31 km south) and Musina (located 36 km north) of the proposed SEZ site.

The MMSEZ will comprise an offering of **mixed land uses and infrastructure provision** to ensure the optimal manufacturing operations in the energy and metallurgical complex. It is envisaged that the energy and metallurgical complex shall comprise **various manufacturing plants**.

1.2 PROJECT BRIEF

In terms of the brief of the project, the need was expressed for a **socio-economic impact assessment** pertaining to the establishment of the MMEMSEZ. The socio-economic impact assessment seeks to determine the **scope and range of possible socio-economic impacts** that could be generated by the proposed SEZ based on the **construction and operation of the project**.

The socio-economic impact assessment will form part of a wider range of studies and specialist inputs to a final **environmental impact assessment (EIA) report** – an EIA and its process is used to identify, predict and assess the potential positive and negative impacts of a proposed project (including reasonable alternatives) on the biophysical, social and economic

environment and to propose appropriate management actions and monitoring programmes.

1.3 METHODOLOGY

In the context of the brief, the project will be executed in terms of an **economic impact modelling framework**. The methodology applied as part of the research project is outlined in the following diagram and explained in greater detail in the following paragraphs.

Diagram 1.1: Research Project Methodology Steps

Step 1

- Inception and Project Definition

Step 2

- Base Profile and Trend Analysis

Step 3

- Model Development and Impact Assessment

Step 4

- Implications, Recommendations and Inputs to Mitigation plan

STEP 1: INCEPTION AND PROJECT DEFINITION

The step will serve to refine the scope of the brief. It is imperative that the economic impact assessment to be performed, is tailored according to the project's unique requirements.

STEP 2: BASE PROFILE AND TREND ANALYSIS

The step will seek to compile a comprehensive status quo dataset on the affected local economies, as well as pertinent land use and concise demographic / socio-economic indicators and profiles. These datasets will provide vital base information for development of the impact model for the area.

STEP 3: MODEL DEVELOPMENT AND IMPACT ASSESSMENT

The purpose of the step is to develop and calibrate an econometric impact model and simulate the economic effects of the proposed project as described in the preceding step and quantify the multiple economic impacts of the project by means of a computerised economic simulation model based on the input-output technique.

STEP 4: IMPLICATIONS, RECOMMENDATIONS AND INPUTS TO MITIGATION PLAN

The results obtained from previous steps will be interpreted to ensure sustainable development of the project. market based implementation guidelines will be formulated to guide project implementation towards maximising potential economic impacts and project sustainability.

1.4 LOCALITY / ZONE OF INFLUENCE

The locality, or zone of influence, is based on the concept of host and supporting municipalities. The host municipality refers to the geographic region (administrative demarcation) which is home to the SEZ project in question, while supporting municipalities are geographic regions that border the host municipality and are regions where labour and other resources and services are potentially sourced.

The proposed inclusion of the MMEMSEZ has a sphere of influence which extends to the following areas:

- ✓ The host municipalities:
 - Musina Local Municipality and Makhado Local Municipality which includes the towns of Musina and Louis Trichardt and contains a portion of the Venda Tribal Authority homeland.
- ✓ The supporting municipalities:
 - which include the Greater Giyani, Greater Letaba, Thulamela, Blouberg, Molemole, and Collins Chabane local municipalities.

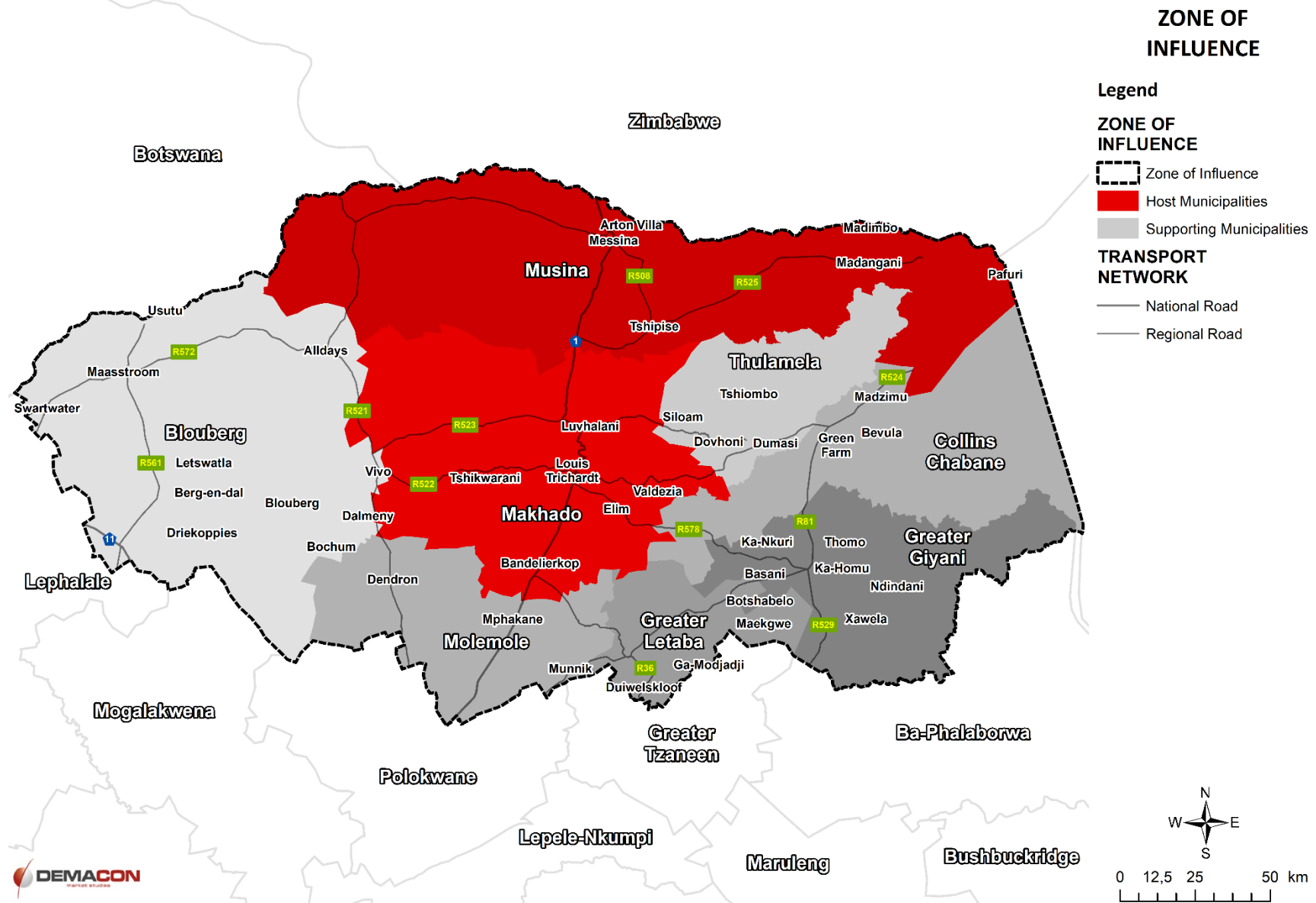
The economic data analysed in this report focuses on the Musina and Makhado Local Municipalities as the local economy/s in which the proposed SEZ is situated.

The Musina and Makhado municipalities are situated in the Vhembe District Municipality, which in turn is situated in the Limpopo Province. Reference is also made to these economic geographies in order to fully analyse relevant economic data.

The analysis of socio-economic data is focused on the Musina and Makhado host municipalities and bordering supporting municipalities. Detailed analysis is conducted on the host municipalities, while reference is made to supporting municipalities as well.

In order to gain insight into the spatial orientation of the host and supporting municipalities, Map 1.1 is provided.

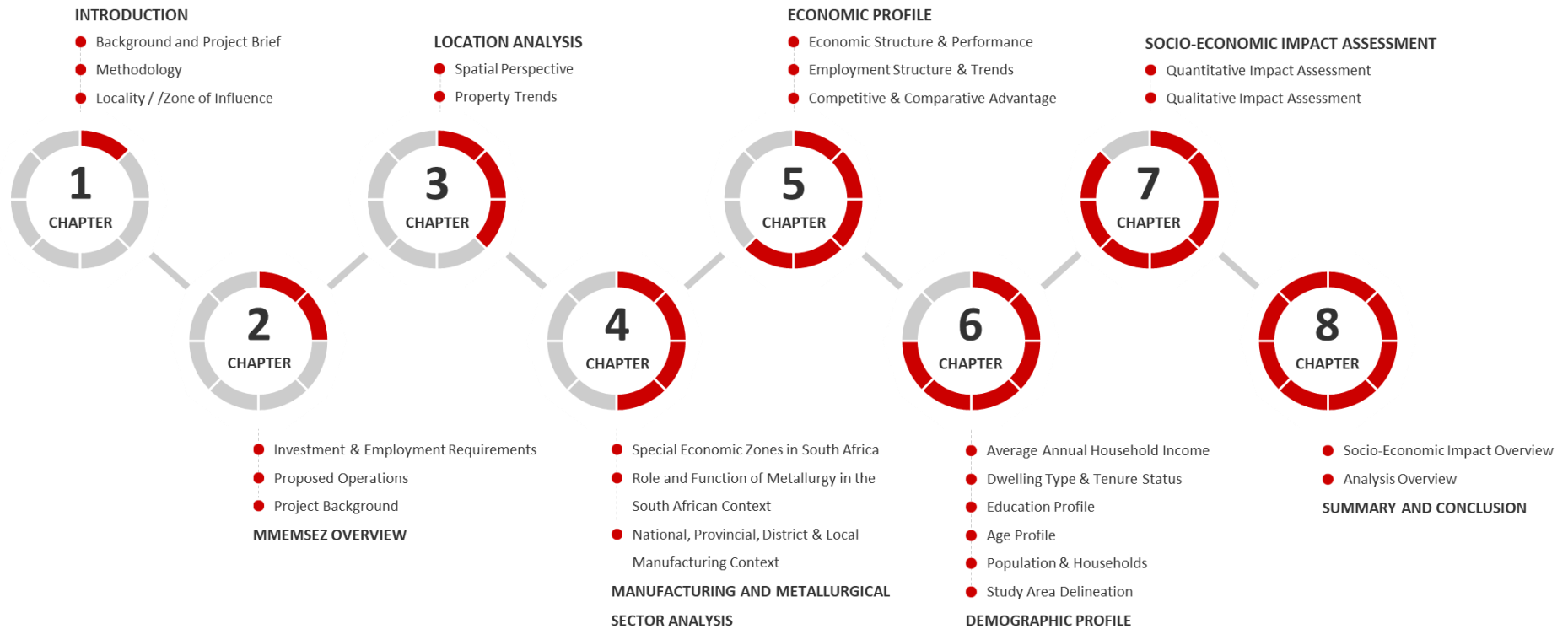
Map 1.1: Musina-Makhado Energy and Metallurgy Special Economic Zone - Zone of Influence



Source: DEMACON GIS, 2019

1.5 REPORT OUTLINE

The remainder of the report is structured under the following main headings:



An aerial photograph of an industrial area, likely a special economic zone, featuring various buildings, roads, and parking lots. A large, bold red number '2' is superimposed on the right side of the image. The text is in a bold, red, sans-serif font.

MUSINA-MAKHADO ENERGY AND METALLUGY SPECIAL ECONOMIC ZONE OVERVIEW

2 MUSINA-MAKHADO ENERGY AND METALLURGY SPECIAL ECONOMIC ZONE OVERVIEW

2.1 INTRODUCTION

Chapter 2 of the report provides a brief overview of the MMEMSEZ. The chapter seeks to provide a contextual background geographically, as well as operationally, of the MMEMSEZ, and to highlight the key benefits of the project; potential role-players to the project; any issues and/or restrictions that may hamper the sustainable operation of the project; and to identify key considerations.

The purpose of the chapter is highlight key information in regard to:

- ✓ the background and proposed operation of the MMEMSEZ,
- ✓ estimated capital investment of the MMEMSEZ,
- ✓ the estimated employee requirement of the MMEMSEZ,
- ✓ proposed phasing of implementation and operational start of the MMEMSEZ, and
- ✓ other notable information (i.e. water requirements, logistics, etc).

The following sections provide a concise overview of the MMEMSEZ in terms of:

01	Project Background	?
02	Proposed Operations, Investment Value and Employment Requirements	🏭
03	Project Master Plan	🧩
04	Key Considerations	i

2.2 PROJECT BACKGROUND

The Musina-Makhado Special Economic Zone (MMSEZ) consists of two locations positioned along the N1 Corridor which connects South Africa to the broader Southern Africa Development Community (SADC) and is also positioned in line with the Trans-Limpopo Spatial Development Initiative.

The Limpopo Economic Development Agency is responsible for the facilitation and management of the planning and development of the proposed SEZ.

The first location of the SEZ is situated north of Musina at the border of South Africa and Zimbabwe. The site is positioned to facilitate light-industrial and agro-processing activities (inclusionary of logistics port activities) that due to its proximity to the N1 Corridor and South Africa-Zimbabwe border can access broader markets and participants.

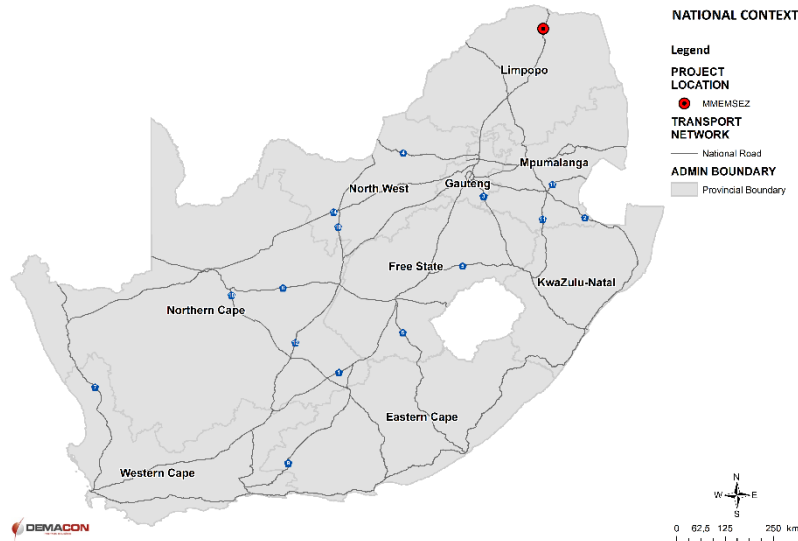
The second location, and the focus of this impact assessment, is positioned between the towns of Musina and Makhado (Louis Trichardt) and extends along the western portion of the N1 highway.

The proposed development site is positioned across the shared administrative border of the Musina and Makhado Local Municipalities and is positioned within the Vhembe District Municipality administrative region. The development site consists of 8 farms totalling 8 048 hectares.

The second location is positioned to function as a metallurgical cluster with the aim to beneficiate metals with supporting up- and down-stream activities. The initiative strives toward creating a mixed land-use offering that comprises necessary infrastructure that will support optimal development and operational activities once complete.

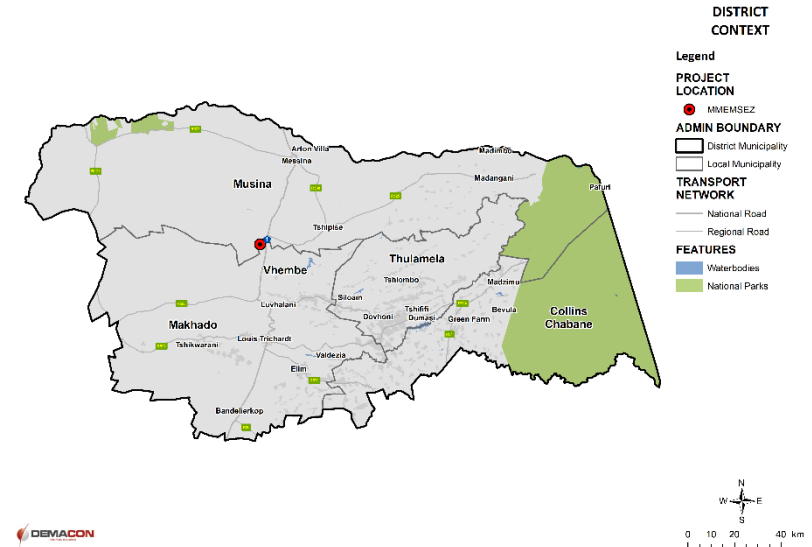
The following maps provide a contextual overview of the spatial positioning of the MMEMSEZ.

Map 2.1: National Context of the MMEMSEZ



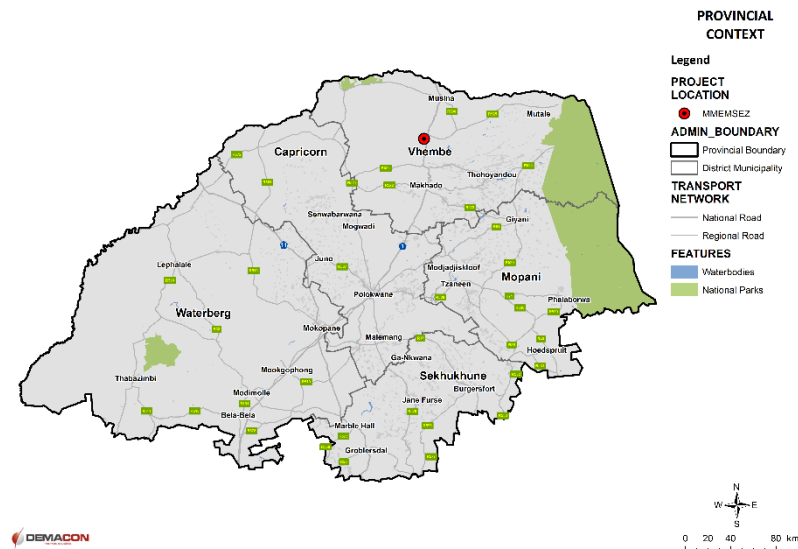
Source: DEMACON GIS, 2019

Map 2.3: District Context of the MMEMSEZ



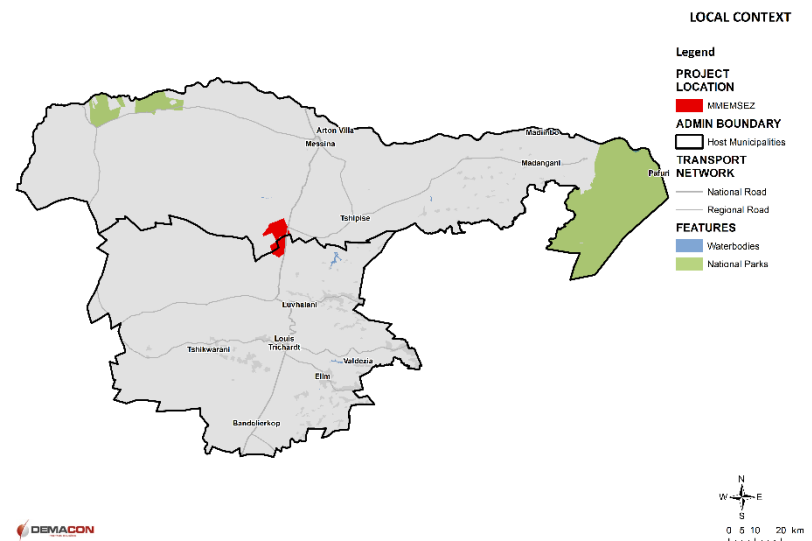
Source: DEMACON GIS, 2019

Map 2.2: Provincial Context of the MMEMSEZ



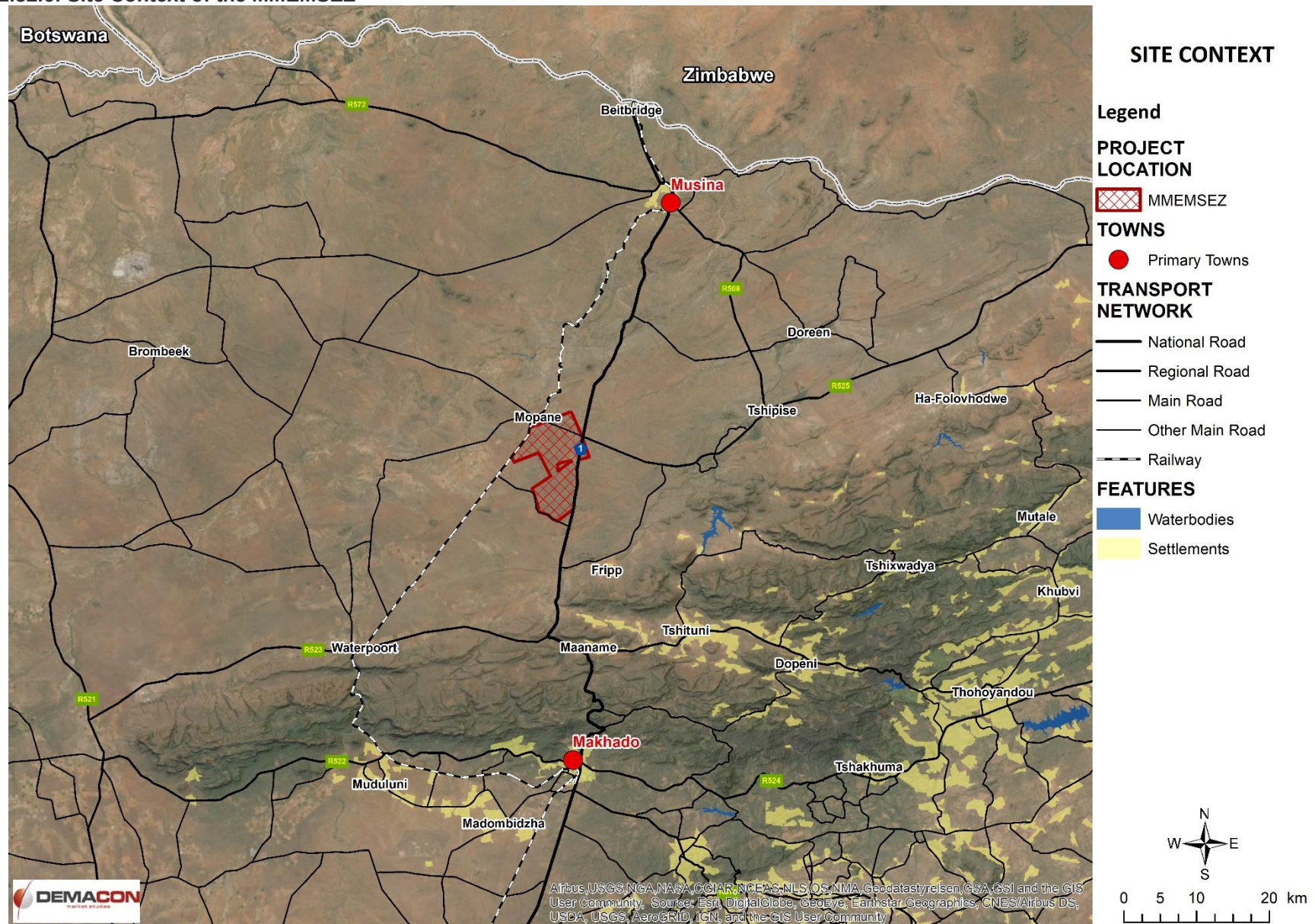
Source: DEMACON GIS, 2019

Map 2.4: Local Context of the MMEMSEZ



Source: DEMACON GIS, 2019

Map 2.52.6: Site Context of the MMEMSEZ



Source: DEMACON GIS, 2019

2.3 PROPOSED OPERATIONS, INVESTMENT VALUE AND EMPLOYMENT REQUIREMENTS

The following section seeks to review the various operations proposed as part of the MMEMSEZ. The purpose is to identify manufacturing plants and other operational activities proposed in the SEZ and the approximate investment value for each activity.

The section further seeks to identify the approximate timeframe for implementation and the expected start year of operations. The phasing provides an essential indication of the likely start of construction and operations as well as the rate at which investment could be expected.

The phasing further provides information in regard to the expected need for employees at the SEZ and the rate at which new employees would be required from the market.

The section also identifies the sources of income for the SEZ, bulk infrastructure requirements, logistical requirements, as well as additional developmental activities (i.e. proposed residential township development) proposed in support of the SEZ.

The following sub-sections focus on:

- ✓ The proposed operations in the SEZ – including estimated investment value and processing capacity,
- ✓ The estimated labour required to operate proposed plants and ancillary operations,
- ✓ Bulk infrastructure requirements of the SEZ,
- ✓ The phasing of the SEZ,
- ✓ Sources of income for the SEZ,
- ✓ Logistical requirements of the SEZ and
- ✓ The proposed residential township development supporting the SEZ.

2.3.1 PROPOSED OPERATIONS IN THE SEZ AND SUPPORTING RESIDENTIAL TOWNSHIP

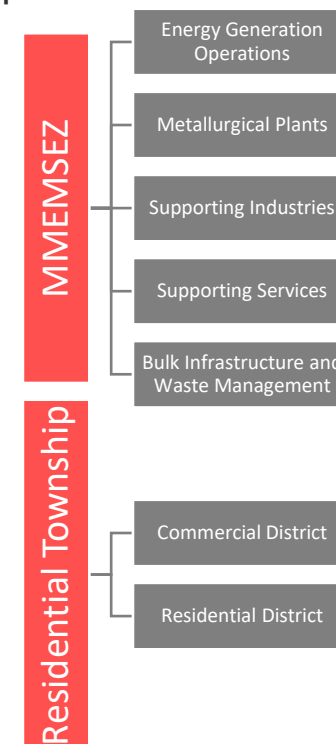
The proposed operations in the MMEMSEZ consists of multiple plants used for energy generation, metallurgy and bulk infrastructure supply. Proposed

operations also incorporate storage facilities, bonded areas, machining, logistics, administrative functions and a visitor's lodge.

In support of the MMEMSEZ a residential township establishment is proposed. The residential township's aim is to provide residential and commercial facilities to labourers employed at the SEZ. It should be noted that the proposed residential township is to be located on land separate from the SEZ and will be under ownership of the MMSOC.

The following diagram and table provide an overview of the proposed operations that form part of the MMEMSEZ as well as land uses incorporated as part of the proposed residential township.

Diagram 2.1: Concise Overview of Operations in the MMEMSEZ and Residential Township Land Uses



Source: DEMACON ex IX Engineers and MCC – Internal Master Planning, 2019

Table 2.1: MMEMSEZ Proposed Operations and Residential Township Land Uses

Project Type	Project Name
Energy Generation	Thermal Power Plant
Energy Generation	Coal Washery
Energy Generation	Coking Plant
Energy Generation	Heat Recovery Power Generation (included as part of Coking Plant)
Metallurgical Plant	High Vanadium Steel
Metallurgical Plant	Manganese Steel
Metallurgical Plant	Ferromanganese
Metallurgical Plant	Silicon-Manganese
Metallurgical Plant	Stainless Steel
Metallurgical Plant	Ferrochrome
Metallurgical Plant	Vanadium-Titanium Magnetite
Supporting Industries	Cement
Supporting Industries	Refractories
Supporting Industries	Lime
Supporting Services	EMSEZ Administrative Centre
Supporting Services	Visitors Lodge and Conservation Area
Supporting Services	Logistics Centre
Supporting Services	Bonded Area
Supporting Services	Machinery Zone
Supporting Services	Processing Zone
Supporting Services	Fuel and Gas Storage Facilities
Bulk Infrastructure and Waste Management	Domestic Waste Site

Project Type	Project Name
Bulk Infrastructure and Waste Management	Process and Sewerage Treatment
Bulk Infrastructure and Waste Management	Industrial and Domestic Water
Residential Township	Office Buildings
Residential Township	Government Offices
Residential Township	5-Star Hotel
Residential Township	3-Star Hotel
Residential Township	Shopping Malls, Supermarket & Farmers Market
Residential Township	Worship Buildings
Residential Township	Smart Buildings
Residential Township	Residential (Large Erven)
Residential Township	Residential (Medium Erven)
Residential Township	Apartment Blocks
Residential Township	Hospital
Residential Township	Schools
Residential Township	Museum
Residential Township	Gymnasium
Residential Township	Central Plaza
Residential Township	Parking (Basement)
Residential Township	Parking (Open)

Source: DEMACON ex IX Engineers and MCC – Internal Master Planning, 2019

From Table 2.1 it is evident that the MMEMSEZ proposes a broad range of operations that can broadly be classified in accordance to five functions:

- ✓ Energy generation,
- ✓ Metallurgical plants,
- ✓ Supporting industries,
- ✓ Supporting services, and
- ✓ Bulk infrastructure and waste management

Similarly, the proposed residential township incorporates a wide range of land uses that can be summarised in accordance with the following two functions:

- ✓ A commercial district, and
- ✓ A residential district.

The following table provides a concise overview of the planned capacity per the broad range of operations in the SEZ. A detailed breakdown per plant and other activities can be found in Section 2.3.7.

Table 2.22.3: Broad Overview of the Planned Capacity of MMEMSEZ Operations Planned Capacity

Project Type	Planned Capacity
Total Energy Generation Capacity	3 690 MW
Total Metallurgical Plant Capacity	1 900 (10 ktpa)
Total Supporting Industries Capacity	350 (10 ktpa)
Total Bulk Infrastructure Capacity	52.5 (10k m ² /day)

Source: DEMACON ex IX Engineers and MCC – Internal Master Planning, 2019

Planned energy generation estimates indicate that the SEZ seeks to generate **3 690 MW of electricity** to support metallurgical, supporting and administrative functions

Metallurgical plants seek to process a total of **1 900 (10 ktpa) of raw materials** to produce metallurgical steel and other products. Industries such as the cement, lime and refractories plants can process a total of **350 (10 ktpa)**. Sewerage and wastewater treatment seeks to process more than **50 (10 m²/day) of waste water**.

The following table provides a concise overview of the total investment value per the broad range of operations in the SEZ. The table also provides a concise overview of the total investment value for the proposed residential township. A detailed breakdown per plant and other activities can be found in Section 2.3.7.

Table 2.42.5: Broad Overview of the MMEMSEZ Total Investment Value

Project Type	Total Investment Value	
	USD / Million	R / Million
Total Energy Generation Investment	\$4 873	R69 634
Total Metallurgical Plant Investment	\$10 346	R147 843
Total Supporting Industries Investment	\$565	R8 074
Total Supporting Services Investment	\$2 750	R39 297
Total Bulk Infrastructure Investment	\$190	R2 715
Total Commercial District Investment	\$800	R11 432
Total Residential District Investment	\$600	R8 574
Total MMEMSEZ Investment	\$18 724	R267 563
Total Residential Township Investment	\$1 400	R20 006
Total Investment Value	\$20 124	R287 569

Source: DEMACON ex IX Engineers and MCC – Internal Master Planning, 2019

Table 2.3 shows that the total investment value for operations in the SEZ amounts to **\$18.724 billion**. To convert the US Dollar investment value to

South African Rands, an average Rand to Dollar exchange rate between August 2018 and August 2019 is used (the calculation of an average over a year was done to compensate for day-to-day fluctuations and to provide the most common and stable exchange rate).

The average exchange rate between August 2018 and August 2019 is **R14.29 per 1 US Dollar**. When applying the exchange rate to the US Dollar investment value, the total South African Rand investment value for the MEMSEZ is approximately **R267.563 billion**.

The total US Dollar investment value for the proposed residential township amounts to **\$1.4 billion**. Converted to South African Rand the investment value is calculated to be **R20.006 billion**.

The total investment value for the MEMSEZ and residential township amounts to **\$20.124 billion**. From a South African Rand perspective the total investment amount is **R287.569 billion**.

515% of the total investment value is vested with the establishment of **metallurgical plants**, followed by **energy generation (26%)** and **supporting services (15%)**. The development of a residential township proportionally represents **7%** of the total investment value.

2.3.2 ESTIMATED LABOUR REQUIRED TO SUPPORT OPERATIONS IN THE MEMSEZ

The proposed operations in the MEMSEZ require labour to enable the functionality of plants, supportive industries and administrative functions. Likewise, the residential township also requires labour in order to facilitate optimal functionality. Based on the planned capacity of each proposed operation in the SEZ as well as proposed land uses in the residential township, an estimated number of labourers have been calculated.

The Internal Master Plan of the MEMSEZ (August 2019) outlines the total number of labourers required per operational entity and within the residential township. The master plan further highlights the number of employees required per skills classification and labour market source.

The following table provides a concise overview of the number of labourers required per operational entity in the MEMSEZ as well as labour required in the residential township. The table also further identifies the number of employees per skills classification. A detailed breakdown per plant and other activities can be found in Section 2.3.7.

Table 2.62.7: Broad Overview of the Total Number of Labourers Required in the MEMSEZ and Residential Township

Project Type	Skills Classification			Total
	Executives	Professionals	Ordinary Staff	
Total Energy Generation Labour	491	340	2 948	3 780
Total Metallurgical Plant Labour	3 917	2 712	23 502	30 131
Total Supporting Industries Labour	257	178	1544	1 979
Total Supporting Services Labour	1 612	1 116	9 672	12 400
Total Bulk Infrastructure Labour	66	46	398	510
Total Commercial District Labour	455	315	2 730	3 500
Total Residential District Labour	195	135	1 170	1 500
Total MEMSEZ Labour	6 344	4 392	38 064	48 800
Total Residential Township Labour	650	450	3 900	5 000
Total Labour	6 994	4 842	41 964	53 800

Source: DEMACON ex IX Engineers and MCC – Internal Master Planning, 2019

According to Table 2.4, **48 800 labourers** are required by operational entities within the SEZ at full operational status compared to **5 000 labourers** in the residential township. Approximately **13.0%** of labourers are required in executive roles compared to **9.0%** of labourers required for professional positions and **78.0%** of labourers required as ordinary staff. Labourers are primarily required to support metallurgical operations (56%61.7%) and administrative and support services (235.4%).

According to the Internal Master Plan (August 2019):

- ✓ **60% of executive positions** are to be filled from the local labour market while the remaining 40% of positions are to be filled from the Chinese labour market.
- ✓ **75% of professional positions** are to be filled from the local labour market while the remaining 25% of positions are to be filled from the Chinese labour market.
- ✓ **95% of ordinary staff positions** are to be filled from the local labour market while the remaining 5% of positions are to be filled from the Chinese labour market.

Based on the above, on average **89%** or **43 261 47 694** of potential employment opportunities created internally by the SEZ and residential township are to be occupied by labour from the South African labour force. In more detail:

- ✓ **3 806 4 196 executive employment opportunities** will be available to the South African labour force,
- ✓ **3 632 3 294 professional employment opportunities** will be available to the South African labour force,
- ✓ **39 866 36 161 ordinary staff employment opportunities** will be available to the South African labour force.,

2.3.3 TOTAL ANNUAL OUTPUT OF THE MMEMSEZ AND RESIDENTIAL TOWNSHIP AND SEZ SOURCES OF REVENUE

The operation of the MMEMSEZ and residential township would result in a monetary output for operators and investors of the SEZ. The output is based on the expected processing capacity of plants and other function of the SEZ and the sale of products to the market.

The purpose of the sub-section is to provide an overview of the estimated annual monetary output of the SEZ and other activities. The information provides background to the anticipated impact that the SEZ may have on the broader economy.

The following table provides an overview of the estimated monetary output that could be achieved by the MMEMSEZ and residential township during full operational capacity. It should be noted that assumptions similar to those

applied to the capital investment value have been applied to this sub-section.

Table 2.8: Broad Overview of the MMEMSEZ Total Annual Output

Project Type	Total Output Investment Value	
	USD / Million	R / Million
Total Energy Generation Output	\$3 636	R51 956
Total Metallurgical Plant Output	\$20 756	R296 600
Total Supporting Industries Output	\$1 315	R18 791
Total Supporting Services Output	\$3 200	R45 727
Total Bulk Infrastructure Output	\$171	R2 444
Total Commercial District Output	\$900	R12 861
Total Residential District Output	\$500	R7 145
Total MMEMSEZ Output	\$29 078	R415 518
Total Residential Township Output	\$1 400	R20 006
Total Output Value	\$30 478	R435 523

Source: DEMACON ex IX Engineers and MCC – Internal Master Planning, 2019

Table 2.5 shows that the bulk of monetary output that could be generated by the MMEMSEZ and residential township is from MMEMSEZ operations. The total estimated monetary output of the MMEMSEZ and residential township is **R435.5 billion** of which **R415.5 billion** is generated by the SEZ and **R20.0 billion** is generated by the residential township.

Monetary output generated by metallurgical operations proportionally represent **68%** of total output value, followed by energy generation (**12%**) and supporting services (**11%**).

The Internal Master Plan (August 2019) further notes that products produced by the MMEMSEZ will by and large be marketed to the Chinese market (i.e. 70% of products produced). Approximately 20% of products produced are marketed to the African market (mostly SADC and DRC), while 10% of products produced are marketed to the South African market.

A detailed breakdown of estimated monetary output per operational activity of the MMEMSEZ and residential township are provided in Section 2.3.7.

Aside from monetary output generated by operations in the SEZ and the operation of the residential township, a number of revenue streams generate income directly for the SEZ and SEZ Operator.

The income derived from revenue streams (i.e. moneys paid by operational entities in the SEZ to the SEZ Operator for services rendered) are used by the SEZ Operator for capital, operating and maintenance purposes.

The revenue streams include:

- ✓ Potable water purification and distribution;
- ✓ Process water treatment & distribution;
- ✓ Electricity distribution;
- ✓ Environmental management fee including a rehabilitation fund;
- ✓ Municipal waste collection
- ✓ Rates (refuse) & taxes (property) payable to the municipality
- ✓ Operator levy to all investors for the maintenance of roads, storm water, security and other non-met red service utilities;
- ✓ Sanitation (sewerage) collection & treatment,
- ✓ Industrial waste management, and
- ✓ Land lease to all investors.

The revenue generated from the above revenue streams assist with the payment of service level agreements to other entities for services rendered to the SEZ. Services include:

- ✓ Municipal waste collection or fee at landfill site
- ✓ Taxes payable applicable to the municipality
- ✓ Bulk service providers e.g. water and electricity
- ✓ Land lease cost to SOC

2.3.4 MMEMSEZ AND RESIDENTIAL TOWNSHIP PHASING

The phasing of the MMEMSEZ and residential township construction and operation are concurrent processes meaning that when one component of the SEZ is completed operations can start whilst construction of other components continue.

It should be noted that the phasing of the MMEMSEZ implementation is dependent on the approval of the EIA application as well as procurement of external bulk services such as electricity and water. Additionally, construction of access roads and road reconfigurations to the SEZ have to be completed in order to facilitate operations at the SEZ.

According to the Internal Master Plan (August 2019) the broad phasing and operation of components of the SEZ is structured as follows:

Table 2.9: Implementation Phasing of the MMEMSEZ

Item	Construction Start (Year)	Construction End (Year)
Early Works and Internal Bulk Infrastructure	2020	2021
Phase 1 Construction	2022	2026
Phase 2 Construction	2026	2029
Phase 3 Construction	2029	2031

Source: DEMACON ex IX Engineers and MCC – Internal Master Planning, 2019

Detailed information in regard to the phasing and sub-phase of each SEZ component is provided in Section 2.3.7.

2.3.5 EXTERNAL AND INTERNAL BULK INFRASTRUCTURE

The MMEMSEZ as well as residential township requires extensive bulk infrastructure in order to operate effectively and sustainably. The provision of these services in the context of the Limpopo Province, which is a water scarce area, is of paramount importance in order to secure future sustainability of the SEZ and associated facilities.

Thus, it is necessary to provide an overview of the provision of external and internal bulk services as an indicator to the increased demand that is likely to impact on the local, regional and provincial service delivery infrastructure.

EXTERNAL BULK SERVICES

According to the Internal Master Plan (August 2019), the provision of external bulk services is the responsibility of the MMSOC. The MMSOC is responsible for the following (please refer to the Internal Master Plan – August 2019 for more details):

- ✓ Upgrading of existing roads to the MMEMSEZ.
- ✓ Building of new interchanges from the N1 national road.
- ✓ Upgrading and installation of existing and new railway lines.
- ✓ Providing of bulk water up to the boundaries of the MMEMSEZ site.
- ✓ Providing of electricity/substation(s)/switch station(s) to the boundaries of the MMEMSEZ and relocating an existing 132kVA line.
- ✓ Telecommunication/data facilities up to the border of the EMSEZ site.

According to the Internal Master Plan water demand in the area, which includes the MMEMSEZ, all new mines, and water needs of the Musina and Makhado Municipalities escalate from 95 million m³ litres of water per annum in 2020 to 132 million m³ litres of water per annum by 2040.

It has been noted that the MMEMSEZ will seek to acquire water from multiple sources which includes sourcing water from Zimbabwe. Current plans are still underway in determining the provision and quantity thereof.

The demand for electricity by the MMEMSEZ is largely contained by the MMEMSEZ through the power plant being constructed as part of SEZ. The power plant will supply the needs of the SEZ and at full operational capacity will be able to export electricity to South Africa. Up to the time that the power plant is erected, the SEZ requires electricity from Eskom. It is estimated that 1 MVA of electricity is required during the construction phase where after demand from Eskom will decrease as the power plant comes online.

INTERNAL BULK SERVICES

Internal bulk services of the MMEMSEZ include:

- ✓ Communication infrastructure,
- ✓ Data infrastructure,
- ✓ Sewer infrastructure,
- ✓ Water infrastructure, and
- ✓ Electricity infrastructure.

The SEZ plans to internally treat sewerage and water and seek to optimally reuse water as far as possible. In a similar fashion electricity provision is facilitated by the SEZ, while connections to outside telecommunications and data providers will be facilitated.

2.3.6 LOGISTICAL REQUIREMENTS OF THE MMEMSEZ

The MMEMSEZ will, once fully operational, require significant logistical operations in order to transfer raw materials and other products to the SEZ and transport finished products to local, African and international markets.

The following is an excerpt from the Internal Master Plan (August 2019) regarding the inbound and outbound logistical requirements of the SEZ.

INBOUND LOGISTICS

It is planned that all inbound transport of material will take place either via rail or truck road transport. Access to all sites were planned for both methods. Weighbridges will be installed to weigh all incoming and outgoing material. It is planned to upgrade the existing Mopane railway station with a shunting yard to cater for 50 trains per day with each 50 wagons per train and 300 road trucks per day (at full capacity in phase 3) with enough parking area for the road trucks.

Provision were made for bulk fuel and gas storage facilities in the northern area of the MMEMSEZ site.

A bonded area was provided where all final products can be stored, administrated, inspected, weighed, checked, sealed and loaded for export or local use. Weighbridge(s), administration centre and allocated areas will be established to cater for all different investors.

OUTBOUND LOGISTICS

The train inbound and outbound facilities will be the same. All trains will come in and out on the same rail tracks/path. Enough rail lines will be provided to handle the volume and shunting required and planned.

A bonded area was provided where all final products can be stored, administrated, inspected, weighed, checked, sealed and loaded for export or local use. Depending on the final products or materials, it can be taken out of the MMEMSEZ site (bonded area) either by train or road trucks in sealed containers. An exit only for final products will be provided at the southwest side of the MMEMSEZ site. Therefore, all materials will flow from the north side to the south side of the MMEMSEZ site.

The Internal Master Plan (August 2019) identifies that approximately 4 552 (10k tpa) of inbound materials are expected compared to 1 090 (10k tpa) outbound products.

2.3.7 DETAILED OVERVIEW OF PROPOSED OPERATIONS, INVESTMENT VALUE AND EMPLOYMENT OPPORTUNITIES IN THE MMEMSEZ

The following table provides a detailed breakdown of the operations proposed in the MMEMSEZ, the total estimated investment value per operational entity, and the number of employment opportunities that could be generated by each operational entity.

Table 2.10: Detailed Breakdown of the MMEMSEZ Operational Entities

Project Type	Project Name	Total Planned Capacity	Total Investment Value		Total Number of Labourers				Total Output Value		Phasing		
			US Dollar / Million	Rand / Million	Executives	Professionals	Ordinary Staff	Total Employment Opportunities	US Dollar / Million	Rand / Million	Phase 1	Phase 2	Phase 3
Energy Generation	Thermal Power Plant	3 300 MW	\$3 750	R53 587	143	99	858	1 100	\$1 815	R25 936			
Energy Generation	Coal Washery	2 000 (10 ktpa)	\$150	R2 143	130	90	780	1 000	\$540	R 7 717			
Energy Generation	Coking Plant	300 (10 ktpa)	\$759	R10 846	218	151	1 310	1 680	\$1 140	R16 290			
Energy Generation	Heat Recovery Power Generation (included as part of Coking Plant)	390 MW	\$214	R3 058					\$141	R2 013			
Metallurgical Plant	High Vanadium Steel	100 (10 ktpa)	\$500	R7 145	325	225	1 950	2 500	\$1 000	R14 290			
Metallurgical Plant	Manganese Steel	100 (10 ktpa)	\$600	R8 574	520	360	3 120	4 000	\$1 800	R25 722			
Metallurgical Plant	Ferromanganese	50 (10 ktpa)	\$300	R4 287	133	92	800	1 025	\$1 100	R15 719			
Metallurgical Plant	Silicon-Manganese	50 (10 ktpa)	\$266	R3 801	130	90	780	1 000	\$556	R7 945			
Metallurgical Plant	Stainless Steel	300 (10 ktpa)	\$2 400	R34 296	624	432	3 744	4 800	\$6 000	R85 739			
Metallurgical Plant	Ferrochrome	300 (10 ktpa)	\$1 500	R21 435	801	554	4 806	6 161	\$2 900	R41 441			
Metallurgical Plant	Vanadium-Titanium Magnetite	1 000 (10 ktpa)	\$4 780	R68 305	1 384	958	8 303	10 645	\$7 400	R105 745			
Supporting Industries	Cement	200 (10 ktpa)	\$145	R2 072	78	54	468	600	\$180	R2 572			
Supporting Industries	Refractories	50 (10 ktpa)	\$90	R1 286	95	66	569	729	\$300	R4 287			
Supporting Industries	Lime	100 (10 ktpa)	\$330	R4 716	85	59	507	650	\$835	R11 932			

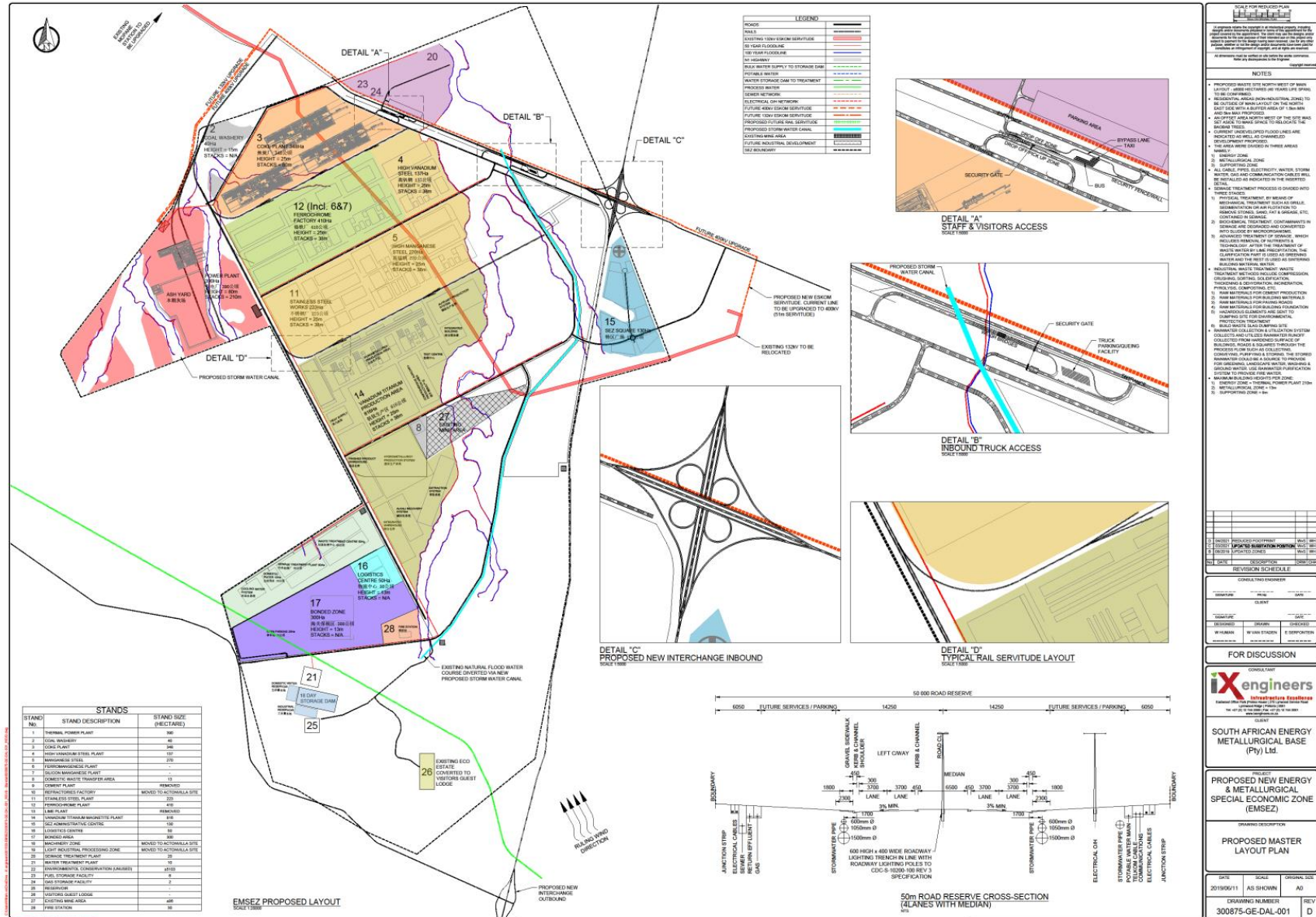
Musina-Makhado Energy And Metallurgy Special Economic Zone – June 2021

Project Type	Project Name	Total Planned Capacity	Total Investment Value		Total Number of Labourers				Total Output Value		Phasing		
			US Dollar / Million	Rand / Million	Executives	Professionals	Ordinary Staff	Total Employment Opportunities	US Dollar / Million	Rand / Million	Phase 1	Phase 2	Phase 3
Supporting Services	EMSEZ Administrative Centre		\$400	R5 716	104	72	624	800	\$300	R4 287			
Supporting Services	Visitors Lodge												
Supporting Services	Logistics Centre		\$500	R7 145	143	99	858	1 100	\$600	R8 574			
Supporting Services	Bonded Area		\$700	R10 003	65	45	390	500	\$800	R11 432			
Supporting Services	Machinery Zone		\$500	R7 145	325	225	1 950	2 500	\$600	R8 574			
Supporting Services	Processing Zone		\$650	R9 288	975	675	5 850	7 500	\$900	R12 861			
Supporting Services	Fuel and Gas Storage Facilities												
Bulk Infrastructure and Waste Management	Domestic Waste Site												
Bulk Infrastructure and Waste Management	Process and Sewerage Treatment	14 (10k m ² /day)	\$90	R1 286	20	14	117	150	\$61	R872			
Bulk Infrastructure and Waste Management	Industrial and Domestic Water	39 (10k m ² /day)	\$100	R1 429	47	32	281	360	\$110	R1 572			
Residential Township	Commercial District	170 000 m ²	\$800	R11 432	455	315	2 730	3 500	\$900	R12 861			
Residential Township	Residential District	1 161 200 m ²	\$600	R8 574	195	135	1 170	1 500	\$500	R7 145			
Total			\$20 124	R287 569	6 994	4 842	41 964	53 800	\$30 478	R435 523			

Source: DEMACON ex IX Engineers and MCC – Internal Master Planning, 2019

The following map provides an overview of the internal master plan of the MMEMSEZ (August 2019)

Map 2.7: Internal Master Plan of the MMEMSEZ - August 2019



Source: DEMACON ex IX Engineers and MCC – Internal Master Planning, 2021

2.4 SYNTHESIS

The following provides a concise overview of Chapter 2.



MMEMSEZ OVERVIEW

- ✓ The proposed development site is positioned across the shared administrative border of the Musina and Makhado Local Municipalities and is positioned within the Vhembe District Municipality administrative region.
- ✓ The development site consists of 8 farms totaling 8 048 hectares.
- ✓ The metallurgical cluster's aim is to beneficiate metals with supporting up- and down-stream activities. The initiative strives toward creating a mixed land-use offering that comprises necessary infrastructure that will support optimal development and operational activities once complete.
- ✓ The MMEMSEZ proposes a broad range of operations that can be classified in accordance to five functions:
 - Energy generation,
 - Metallurgical plants,
 - Supporting industries,
 - Supporting services, and
 - Bulk infrastructure and waste management
- ✓ A proposed residential township incorporates a wide range of land uses that can be summarised in accordance with the following two functions:
 - A commercial district, and
 - A residential district.
- ✓ The total investment value for the MMEMSEZ and residential township amounts to **\$20.124 billion**. From a South African Rand perspective the total investment amount is **R287.569 billion**.
 - The total investment value for operations in the SEZ amounts to **\$18.724 billion** or approximately **R267.563 billion**.
 - The total US Dollar investment value for the proposed residential township amounts to **\$1.4 billion**. Converted to South African Rand the investment value is calculated to be **R20.006 billion**.
 - **51%** of the total investment value is vested with the establishment of **metallurgical plants**, followed by **energy generation (26%)** and **supporting services (15%)**. The development of a residential township proportionally represents **7%** of the total investment value.
- ✓ **48 800 labourers** are required by operational entities within the SEZ at full operational status compared to **5 000 labourers** in the residential township.
 - Approximately **13.0%** of labourers are required in executive roles,
 - **9.0%** of labourers required for professional positions, and
 - **78.0%** of labourers required as ordinary staff.
- ✓ The source labour market for labourers can be summarised as:
 - **60% of executive positions** are to be filled from the local labour market while the remaining 40% of positions are to be filled from the Chinese labour market.
 - **75% of professional positions** are to be filled from the local labour market while the remaining 25% of positions are to be filled from the Chinese labour market.
 - **95% of ordinary staff positions** are to be filled from the local labour market while the remaining 5% of positions are to be filled from the Chinese labour market.
- ✓ The bulk of monetary output that could be generated by the MMEMSEZ and residential township is from MMEMSEZ operations.
 - The total estimated monetary output of the MMEMSEZ and residential township is **R435.5 billion** of which **R415.5 billion** is generated by the SEZ and **R20.0 billion** is generated by the residential township.

LOCATION ANALYSIS



3 LOCATION ANALYSIS

3.1 INTRODUCTION

Chapter 2 seeks to provide an analysis of the locational attributes of the zone of influence (as discussed in Chapter 1). The locational attributes in this instance, refers to the **spatial and developmental direction and status** of the greater district and local (host municipalities) zone of influence in regard to **strategic focus areas, nodal development, and developmental initiatives**.

To purposefully assess and analyse the locational attributes of the afore mentioned zones of influence, an analysis of policy documents such as the Spatial Development Framework (SDF).

The analysis will firstly focus on identifying the locational directives at a district scale, where after the local or host municipality/s locational directives will be considered. It should be noted that a lagging effect does exist between policy directives and on-the-ground conditions.

Additionally, an overview of the manufacturing industry, and more specifically manufacturing / metallurgical sub-sectors is conducted. The overview will seek to review the scope and extent of manufacturing, specifically aligned to the SEZ, within the context of South Africa, the Limpopo Province, and the host municipalities.

This information will assist in understanding the importance and relevance of the manufacturing industry within the various spheres of the economy and will allow for identifying the contextual background to manufacturing operations of the sort.

Lastly, an analysis of property development trends will be considered in order to purposefully understand the spatial development of the local zone of influence and the relevant impacts associated with demand and supply characteristics.

3.2 SPATIAL PERSPECTIVE

3.2.1 NATIONAL CONTEXT

DRAFT NATIONAL SPATIAL DEVELOPMENT FRAMEWORK (2018)

The National Spatial Development Framework of 2018 (Draft) is structured to outline desired spatial growth based on five frames for spatial development. The spatial frames identified by the NSDF provide:

- ✓ A national spatial schema to inform, direct and guide all future infrastructure investment and development spending decisions by government and the private sector,
- ✓ A carefully chosen distinct set of nationally significant places, connectors and areas in and around which to align, integrate and coordinate investment by the private sector and all three spheres of government, and
- ✓ A spatially explicit assessment and accounting tool for monitoring and evaluating all spending and investment decisions by government and the private sector in space and time.

The five frames identified by the NDSF identifies key and priority areas where government and private sector investment opportunities could/should be directed. In light of the Musina-Makhado SEZ, it is essential to understand the intended and proposed future environment within which the SEZ is proposed to function and whether the SEZ is aligned to future spatial plans of National Government.

The following seeks to investigate the proposals outlined by the NSDF in accordance with the affected project area.

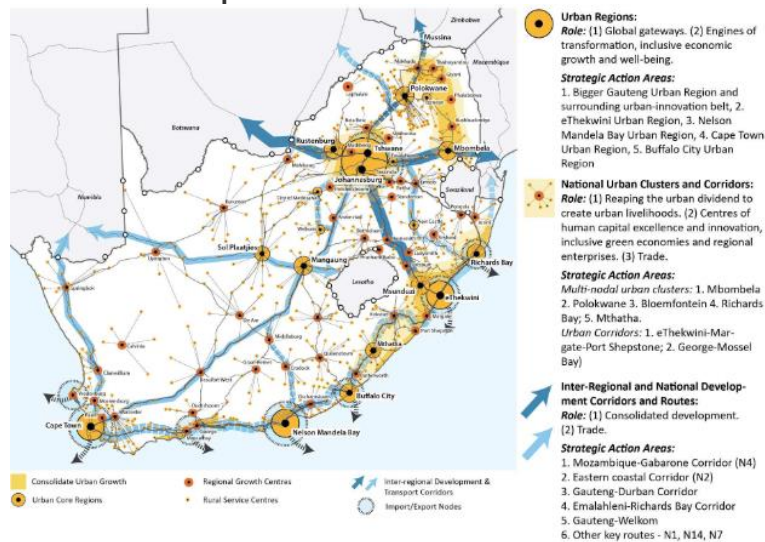
FRAME 1: URBAN REGIONS, CLUSTERS AND DEVELOPMENT CORRIORS AS THE ENGINES OF NATIONAL TRANSFORMATION AND ECNOMIC GROWTH

To focus and sustain national economic growth, drive inclusive economic development and derive maximum transformative benefit from urbanisation and urban living.

According to the NSDF, the town of Makhado is identified as a regional growth centre whilst Musina town is identified as a rural service centre. Additionally, the N1 Highway is identified as a national connectivity corridor. The corridor links with other inter-regional development corridors such as the N4, N2 and N3 Highways.

Corridor development in this frame is essential in light of the Musina-Makhado SEZ whereby the focus is on enabling trade with SADC and other countries trade flows are seen as a tool to strengthen cities and towns positioned along these corridors.

Map 3.1: Frame 1 Proposals



Source: DEMACON ex NSDF, 2019

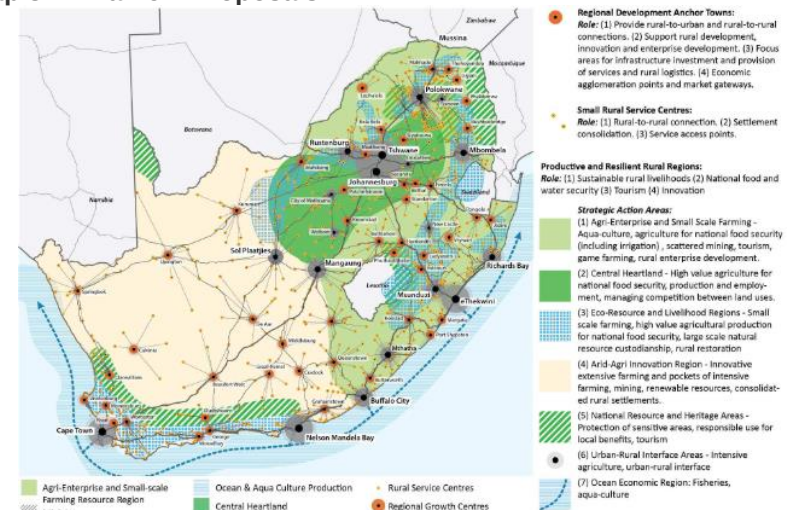
FRAME 2: PRODUCTIVE RURAL REGIONS AND REGIONAL DEVELOPMENT ANCHORS AS THE FOUNDATION OF NATIONAL TRANSFORMATION

To ensure national food security, rural transformation and rural enterprise development and quality of life in rural South Africa through a set of strong urban-rural development anchors in functional regional-rural economies.

The Musina and Makhado areas are positioned within the NSDF identified gri and resource enterprise resource region. The purpose of the region is to identify, protect and manage development of land with high agricultural production potential, and small-scale agriculture and resource enterprise development potential.

The frame also identifies Makhado as a regional growth centre and Musina as a rural service centre. Makhado is viewed as a rural urban anchor. The frame identifies that local rural-urban anchor towns should be prioritised and strengthened to support regional development based on agriculture, mining production and regional tourism.

Map 3.2: Frame 2 Proposals



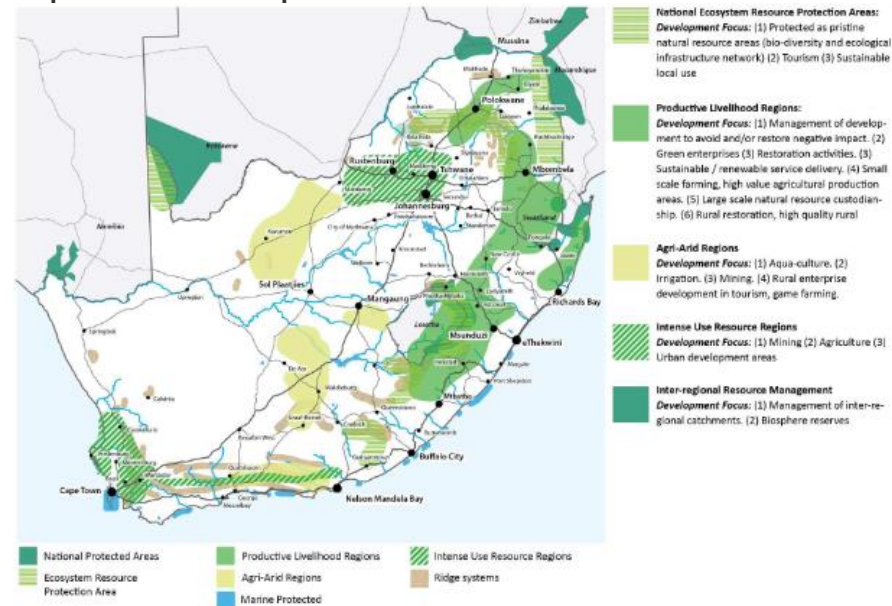
Source: DEMACON ex NSDF, 2019

FRAME 3: NATIONAL ECOLOGICAL INFRASTRUCTURE SYSTEM AS ENABLER FOR A SHARED AND SUSTAINABLE RESOURCE FOUNDATION

To protect and enable sustainable and just access to water and other national resources for quality livelihoods of current and future generations.

No detail specific interventions and focus areas impact on the Musina and Makhado area except for inter-regional resource development based on cross-border parks and the protection of ridges.

Map 3.3: Frame 3 Proposals



Source: DEMACON ex NSDF, 2019

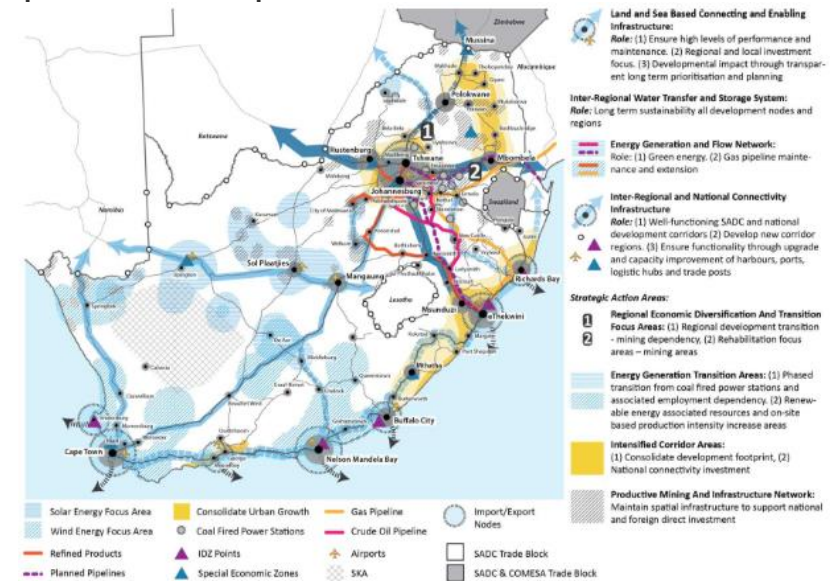
FRAME 4: NATIONAL CONNECTIVITY AND ECONOMIC INFRASTRUCTURE NETWORKS AS ENABLER FOR A SHARED, SUSTAINABLE AND INCLUSIVE ECONOMY

To develop, expand and maintain a transport, trade and communication network in support of national, regional and local economic development.

The frame identifies that existing strategic inter-regional and national road, rail, ports, harbours and logistics hubs should be capitalised on and extended. In this regard the N1 highway and Beitbridge border post is of essence. The spatial infrastructure should also support a sustainable mining economy.

The Makhado area is also seen as the north-western most section of a consolidated urban growth area stretching from Mbombela to Thohoyandou. The consolidation area seeks to intensify corridor areas and consolidate the development footprint and national connectivity.

Map 3.4: Frame 4 Proposals



Source: DEMACON ex NSDF, 2019

FRAME 5: NATIONAL SOCIAL SERVICE AND SETTLEMENT INFRASTRUCTURE NETWORK IN SUPPORT OF NATIONAL WELL-BEING

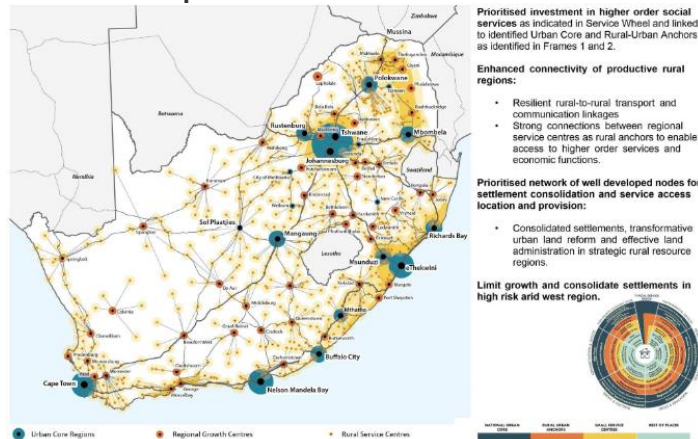
To ensure effective access to the benefits of high quality basic, social and economic services in a well-located system of vibrant rural service towns, acting as urban-rural anchors and rural-rural connectors.

The Makhado town as regional growth point and Musina as rural service centre should through consolidated settlement and rural economic development interventions strengthen local access to social and economic activities and services.

Investment into rural-to-rural public transport and other transport and communication linkages with rural anchors should be undertaken to enable access to higher order services and economic functions.

Consolidated sustainable settlement patterns should be encouraged in rural hinterlands through the consolidation of these settlement areas and discouraging growth of new settlements in unsustainable areas.

Map 3.5: Frame 5 Proposals



Source: DEMACON ex NSDF, 2019

3.2.2 DISTRICT CONTEXT AND LOCATIONAL ATTRIBUTES

DISTRICT INTEGRATED DEVELOPMENT PLAN (2017/18)

The Vhembe District Municipality has identified, through its Integrated Development Plan and Limpopo Spatial Development Framework, a hierarchy of settlements that focus development in strategic localities for the purposes of economic and social development.

According to the Vhembe IDP the following nodes can be identified in the district:

- ✓ Provincial Growth Points – Musina, Makhado and Thohoyandou.
- ✓ District Growth Points – Elim, Waterval, Malamulele, Vuwani and Sibasa.
- ✓ Municipal Growth Points – Masisi, Shakadza, Mutele, Dzanani, Madombidzha, Ka-Majozi, Mhlinga, Tshilamba and Tshandama.

According to the Vhembe IDP, the following corridors are of importance to the district:

- ✓ N1 National Road from Polokwane to Beitbridge
- ✓ R522 from Vivo to Makhado
- ✓ R523 from Vivo via Waterpoort to Masekwapoort
- ✓ R521 from Vivo to Pont drift Border
- ✓ R572 from Musina to Pont drift
- ✓ R524 from the Makhado central business district to Punda Maria and Mozambique
- ✓ R529 from Basani, Malamulele, Giyani to Moiketsi
- ✓ R81 from Road R524 to Giyani
- ✓ R525 from Mopani the N1 Road to Pafuri Gate
- ✓ R578 from Kruger National Park, Malamulele, Vuwani, Giyani via Elim to the N1 National Road
- ✓ Thohoyandou, Masisi, Tshikondeni and Phafuri gate
- ✓ D4 from N1, Vleifontein, Elim Vuwani Malamulele to Shangoni gate

3.2.3 LOCAL CONTEXT AND LOCATIONAL ATTRIBUTES

MUSINA SPATIAL DEVELOPMENT FRAMEWORK (2014/15)

It should be noted that due to the latest version of the Musina SDF being published in the 2014/15 financial year, the SDF does not consider the inclusion of portions of the previous Mutale Local Municipality after the re-demarcation of municipal boundaries for the 2016 local government elections.

Background And Settlement Hierarchy

The Musina Local Municipality's administrative boundaries have been changed by the Demarcation Board for 2016's local government elections. The municipality's eastern border has been expanded to include the northern portions of the former Mutale Local Municipality.

The area included into the Musina Local Municipality is primarily rural in nature. The majority of the area included forms part of the Vhembe Traditional Authority.

The municipal area consists of a primary urban centre (town) and a number of smaller settlements, usually rural in nature and primarily functioning as residential clusters for local communities.

The Musina SDF identifies that the settlement hierarchy of the municipality can be described as follow:

- ✓ First Order Settlement or Provincial Growth Node:
 - Includes the town of Musina and adjacent Nancefield extension. The Musina Town and surrounding suburbs are characterised by reasonably high levels of economic and service delivery levels and acts a service centre to local and surrounding communities.
- ✓ Third Order Noes/Settlements:
 - Includes the Tshipise settlement due to the service delivery nature of the settlement. Tshipise provides a limited selection of economic and service delivery functions and services the local community, surrounding farming communities and tourists visiting the area.

- ✓ Fifth Order Nodes/Settlements:

- Includes areas such as Madimbo, Malale, Tshikhudini, Tanda and Dombani. These settlements are considered to be residential conglomeration areas with no to tlimited economic activity and service delivery activities. These settlements are considered to have limited opportunities for economic and service delivery development.

Transportation And Corridors

The Musina Local Municipality is dissected by various major transportation routes at various scales and levels. The most important of these is the N1 Highway which traverses the municipality from north to south and is considered to be a primary corridor for the municipality.

Other major corridors include:

- ✓ The R572 (east-west linkage from Musina), R525 (east-west linkage between Mopane and Feeskraal), and R509 (north-south linkage between Musina and Tshipise). These corridors are considered to be secondary corridors that link important settlements and provide direct transportation routes.
- ✓ The R521 road which is a north-south linkage between Pontdrift and Alldays is considered to be a tertiary corridor.

The SDF notes that the N1 highway between Musina and Beitbridge is a primary public transport corridor, while the R521 is a primary commuter corridor which connects Polokwane, Dendron and Alldays.

With regards to freight corridors, the SDF notes that the N1 highway between Polokwane and Beitbridge is the most important, while the R521 from Vivo to Pontdrift and the R572 from Musina to Pontdrift are secondary freight transport routes.

Municipal Housing Backlog and Settlement Densities

The municipality is also characterised with exceptionally low settlement densities apart from the Musina and Nancefield areas and areas situated along the major rivers that traverse the municipal area.

The municipality has determined that the Musina Town and surrounds should be the focus of densification and compact urban development in order to facilitate ease of service delivery and economic growth potential.

The housing backlog of the municipality is determined to be approximately 12 600 households. Apart from 200 subsidised housing opportunities being constructed in the Nancefield area, no other immediate housing projects are being undertaken. This is due to long waiting processes with COGHSTA which has to accredit the municipality to implement subsidised housing projects.

The SDF has identified that due to the economic growth of the municipality an influx of new residents is experienced. The influx of new residents in search of economic opportunity primarily locate in backyard and informal settlements in and around the Musina town and in some cases wider rural settlements.

Future Development Plans

The future development of the municipality is largely concentrated in the Musina town and its surrounds. According to the SDF, a total of 553 ha of land is available for development in the Musina urban edge. From a long-term perspective, the town has the opportunity to expand into more than 3 900 ha of land. Nearly 1 000 ha would be considered not developable or required for service provision.

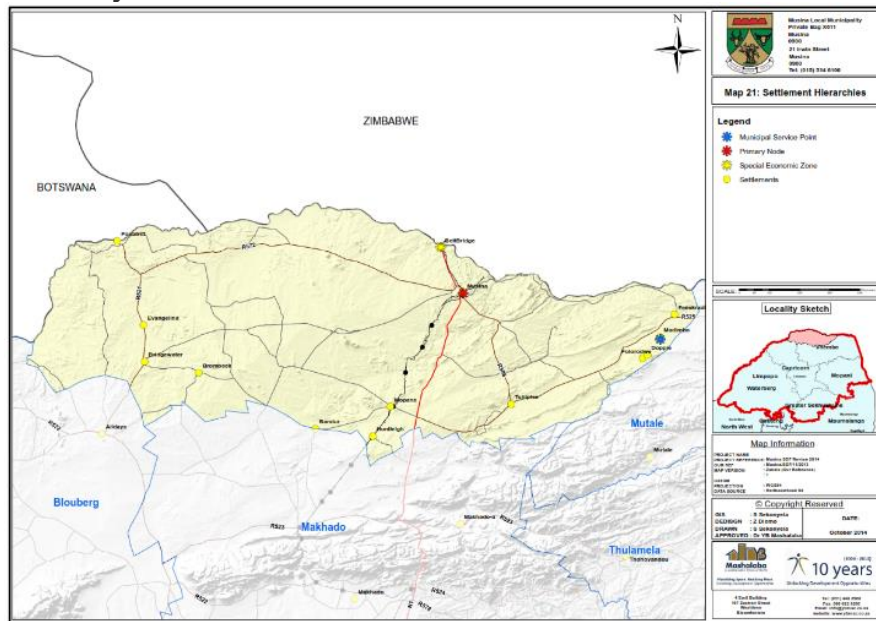
The municipality and more specifically Musina town is considered to be the focus of future investment. Investment potential exists through:

- ✓ The revitalisation of the Musina central business district:
 - The CBD is influenced by high levels of congestion, informality and urban decay.

- It is proposed that:
 - The CBD be revitalised to accommodate business and economic growth,
 - Infrastructure and services be upgraded to ease congestion and provide an environment that is suited to investment,
 - Providing spaces for informal traders,
 - Upgrading of the existing taxi rank in Musina to an integrated public transport node.
- ✓ Creating urban-rural linkages:
 - Integration of rural settlements to the Musina urban node through public transport and mobile service delivery.
- ✓ MUTASSHI Special Economic Zone:
 - The purpose of the project is to develop a special economic zone and logistics hub,
 - The focus area for the project is the activity corridor between Musina and Beitbridge border post,
 - The proposed development seeks to include a regional shopping centre, 10-unit warehouses, double storey office blocks and 10 industrial buildings.
- ✓ Beitbridge Gateway Economic Zone:
 - The objective is to mirror the development taking place on the Zimbabwean side of the border to include:
 - Low carbon sustainable city,
 - Recreational centre,
 - Development of an e-commerce logistics hub, and
 - The establishment of an empowerment incubator.
- ✓ Limpopo Eco-Industrial Park:
 - The project is to be developed in the Antonville area,
 - The proposed development is to include:
 - A coke plant
 - A power co-generation plant,
 - A gas to liquid plant,
 - Plasma waste gasification plant, and

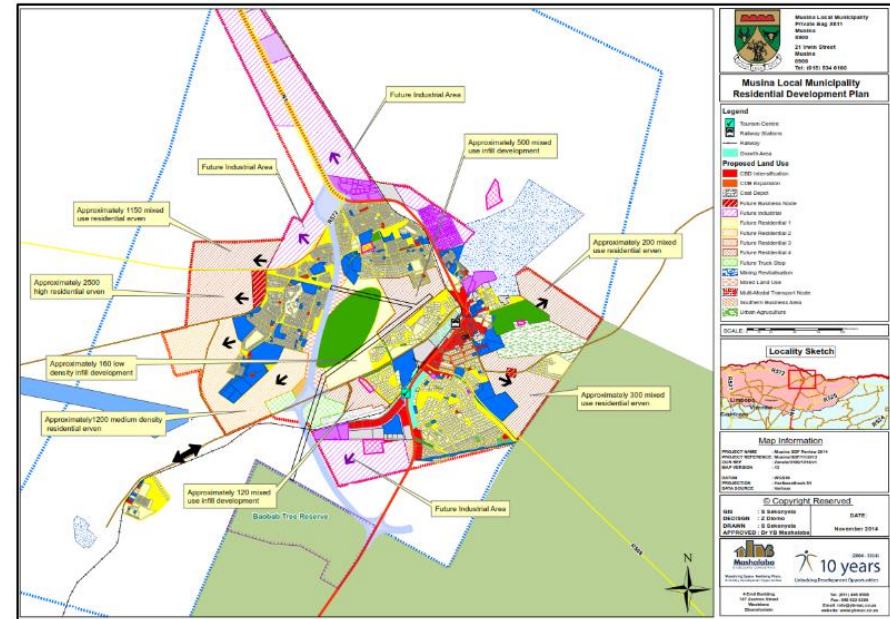
- Brick making factory.
- ✓ N1 Bypass:
 - Development of a bypass road for the N1 Highway to eliminate heavy vehicle through fare in the CBD of Musina, and a truck stop is also proposed with the bypass.
- ✓ Proposed upgrading of the Pontdrift border post to alleviate congestion at the Beitbridge border post.
- ✓ Residential development expansion, infill and densification.
 - 2 270 future mixed-use residential erven proposed,
 - 2 500 high density residential erven proposed,
 - 1 200 medium density residential erven proposed, and
 - 160 low density residential erven proposed.

Map 3.6: Musina Spatial Development Framework Settlement Hierarchy



Source: DEMACON ex Musina SDF, 2019

Map 3.7: Musina Spatial Development Framework Proposed Residential Development



Source: DEMACON ex Musina SDF, 2019



MAKHADO SPATIAL DEVELOPMENT FRAMEWORK

Background And Settlement Hierarchy

The Makhado Local Municipality is situated south of the Musina Local Municipality and is an important bypass for travellers and freight travelling between Musina and Polokwane.

The municipality consists of a central urban core (town) and semi-urban and rural settlements distributed primarily towards the eastern parts of the municipality. The eastern area of the municipality contains the western most areas of the Venda Traditional Authority.

The Makhado SDF identifies that the settlement hierarchy of the municipality can be described as follow:

- ✓ First Order Settlement or Provincial Growth Node:
 - Includes the town of Louis Trichardt and adjacent Tshikota. The Louis Trichardt town and surrounding suburbs are characterised by reasonably high levels of economic and service delivery levels and acts a service centre to local and surrounding communities.
- ✓ Second Order Nodes/Settlements:
 - District growth point – Elim/Waterval
 - Municipal growth point – Madombidzha
 - Population concentration points – Ravele, Tshino, Tshwakhuma, and Maebane.
- ✓ Third Order Nodes/Settlements:
 - Local service points – Buysdorp, Thalane, Amancisini, Valdesia, Vleifontein, and Waterpoort.

The municipality's population is primarily situated in rural and traditional authority areas, whilst the formalised urban component of the municipality constitutes a small percentage of the population.

Rural settlements also show disparities in regard to their levels of development and infrastructure. In some instances, such as Elim, high levels of infrastructure and economic development can be observed.

Development potential, services and economic growth in the rural areas are hampered by the lack of private ownership. Land ownership in the rural areas of municipality is primarily under traditional authority administration and the municipality has a number of issues related to servicing communities, obtaining billing and revenue generation through the provision of services and accessing land for new development opportunities.

Nevertheless, agriculture is a dominant land use in rural communities, while land uses such as commercial, business, retail and industrial are found in Louis Trichardt.

Land ownership in the municipality primarily consists of private ownership but, government entities do own nearly 30% of land. It should be noted that a portion of government owned land is associated with tribal authorities, whose land is kept by government in the form of a trust.

Transportation And Corridors

The transportation network and corridors in the Makhado municipality is characterised by national and regional roads. Most notably, the N1 highway is the dominant corridor in the municipality but traverses in a north-south direction.

Regional roads such as the R523, R522, R524, and R578 traverse the municipality in an east-west direction, creating linkages between the primary corridor and communities in rural localities.

Major public transport routes identified by the SDF include:

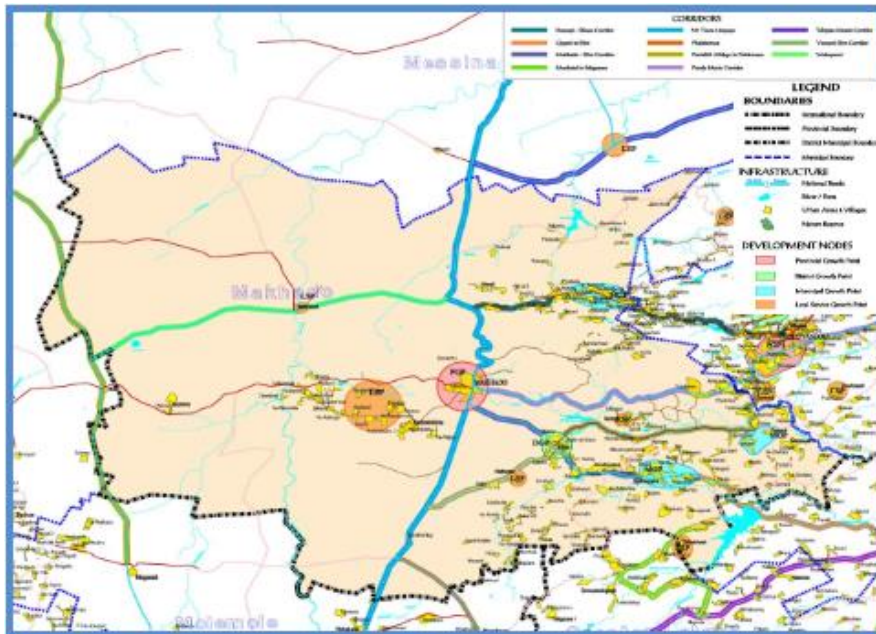
- ✓ The N1 highway between Louis Trichardt and Nzhelele,
- ✓ The N1 highway and R578 between Louis Trichardt and Elim,
- ✓ The R578 between Elim and Giyani,
- ✓ The R524 between Thohoyandou and Tshakhuma,
- ✓ The R523 between Thohoyandou and Nzhelele, and
- ✓ The R578 between Bugeni and Giyani.

Municipal Housing Backlog

The Makhado SDF notes that the current housing backlog in the municipality is 16 207 households. Primarily, households in the municipality undertake subsidised housing and peoples housing processes to obtain a subsidised housing unit. The locality of many households in traditional authority areas make it difficult to implement housing projects due to the lack of private ownership.

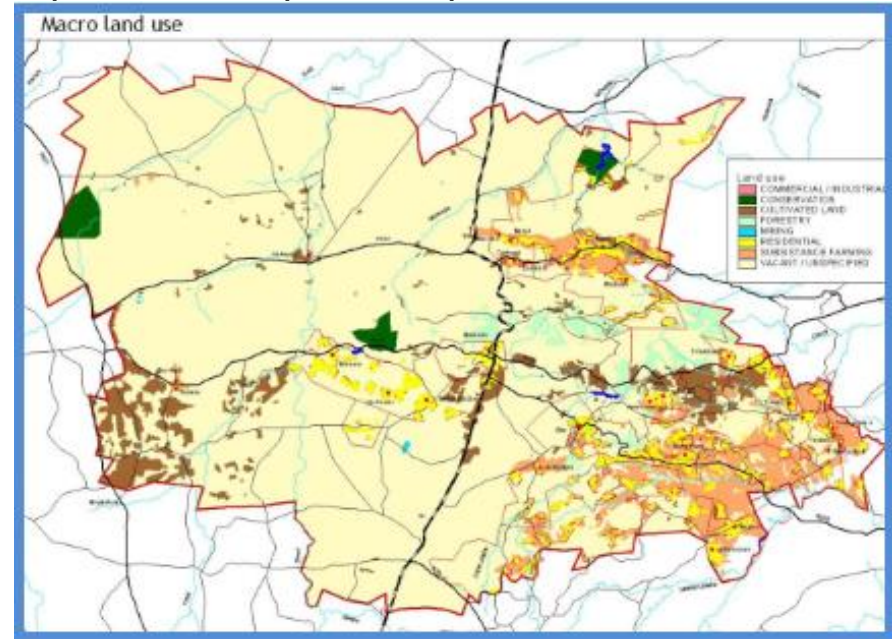
The housing priority list currently focusses on villages in rural areas of the municipality and has earmarked 2 950 houses to be built over the short- to medium-term.

Map 3.9: Makhado Spatial Development Framework Nodes and Corridors



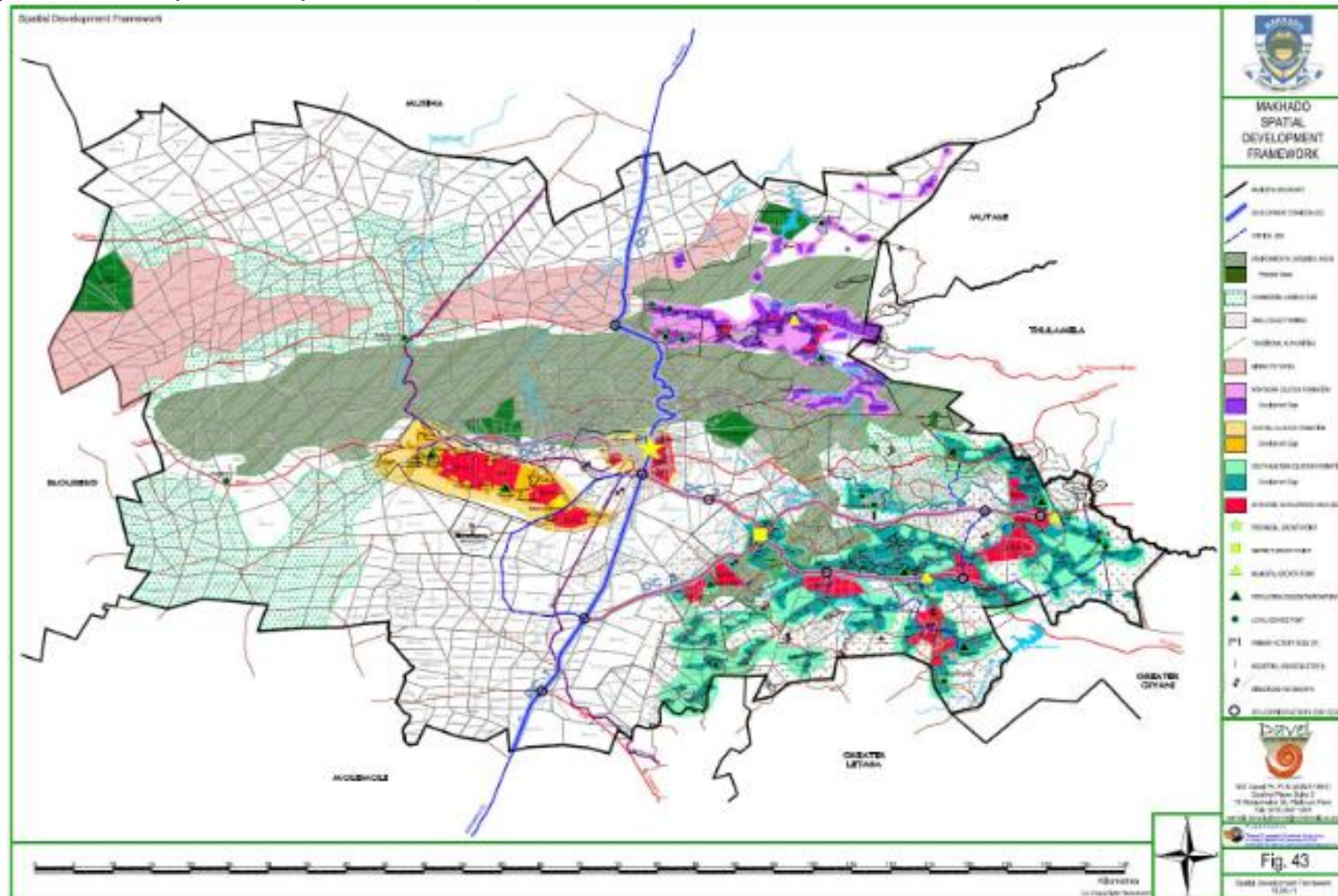
Source: DEMACON ex Makhado SDF, 2019

Map 3.10: Makhado Spatial Development Framework Land Use



Source: DEMACON ex Makhado SDF, 2019

Map 3.11: Makhado Spatial Development Framework, 2011



Source: DEMACON ex Makhado SDF, 2019

3.3 PROPERTY TRENDS

The following section seeks to provide an overview of trends associated with property transactions in the Musina (Musina Town) and Makhado (Louis Trichardt) local municipalities. The significance of this information is to provide an indication of the underlying growth and sale of properties so as to determine the attraction of people/households to the local economy and their degree of permanency.

The following provides a brief overview of property transactions in the host municipalities and the rate of construction of new development. It should be noted that historical data for property transaction trends in the Makhado Municipality could not be obtained due to a lack of historical data collection.

Figure 3.1: Historic and Current Musina Properties on the Market

NUMBER OF PROPERTIES CURRENTLY ADVERTISED	 Houses	12
	 Apartments / Flats	1
	 Vacant Land	2
	 Commercial Properties	1
	 Industrial Properties	0
	 Farms	34

HISTORICAL TRENDS

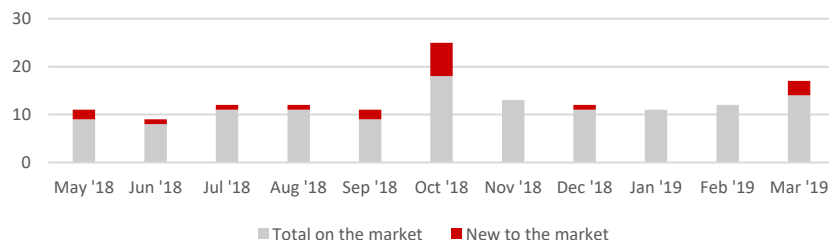
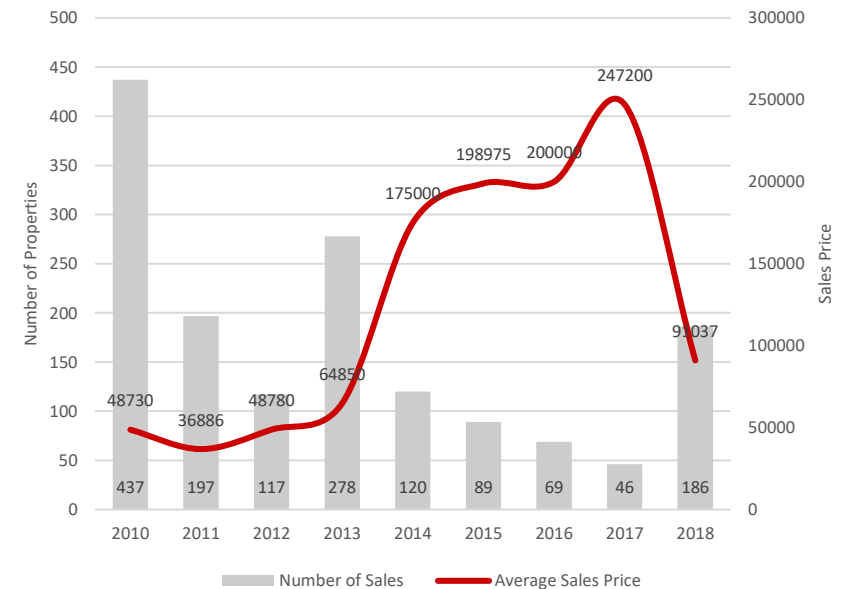


Figure 3.2: Number of Properties Sold and Average Sales Price in the Musina Host Municipality

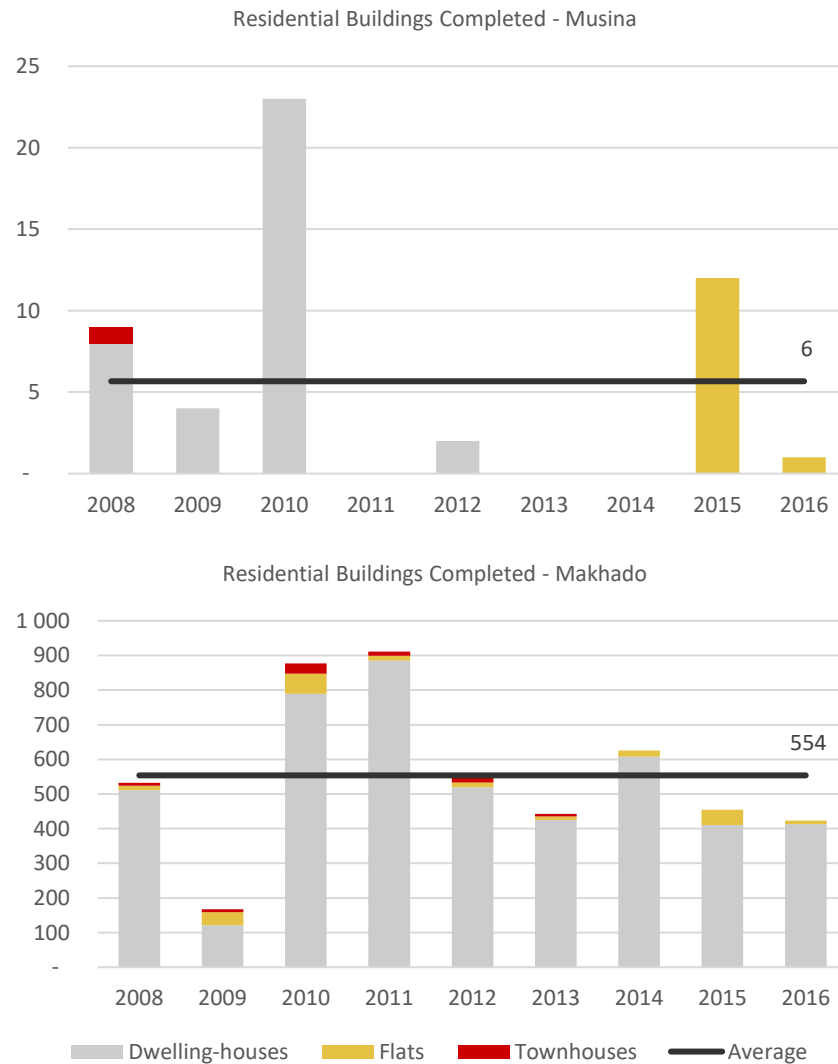


Source: DEMACON ex Property Brokers, 2019

Figure 3.3: Historic and Current Makhado Properties on the Market

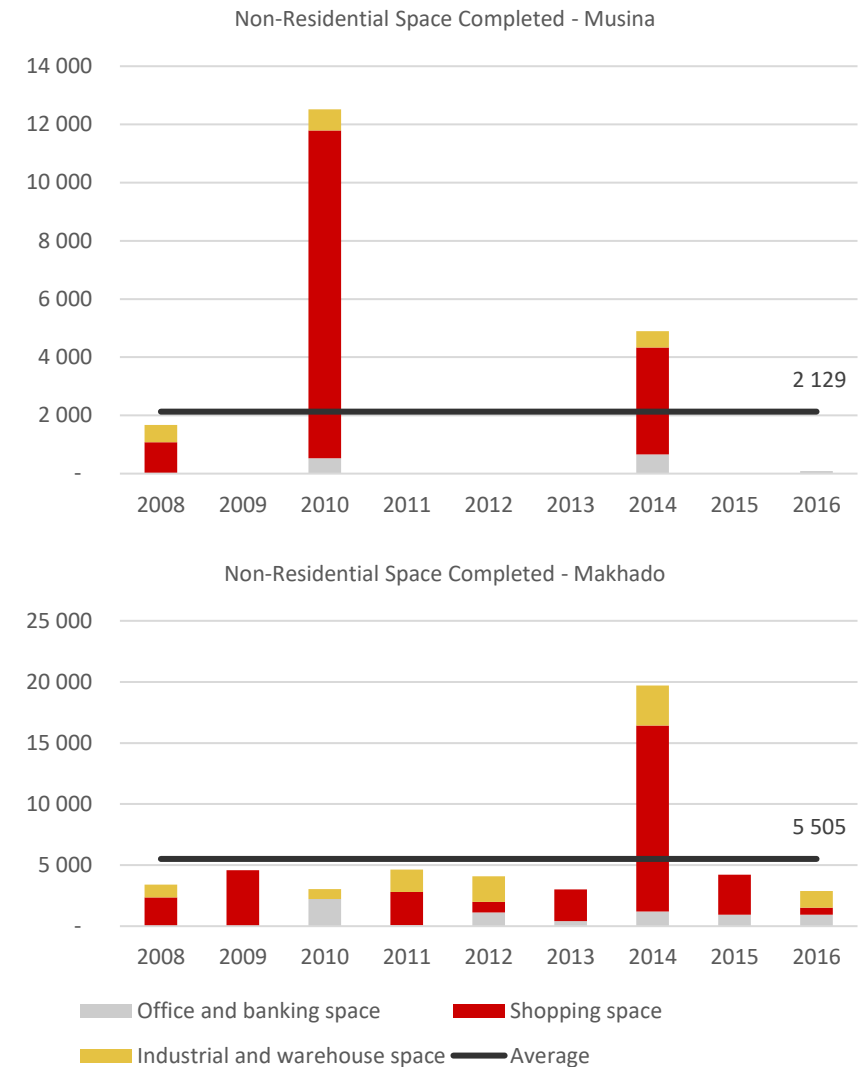
NUMBER OF PROPERTIES CURRENTLY ADVERTISED	 Houses	181
	 Apartments / Flats	32
	 Vacant Land	75
	 Commercial Properties	51
	 Industrial Properties	13
	 Farms	68

Figure 3.4: Number of Residential Dwellings Completed per Type and Year for the Musina and Makhado Local Municipalities



Source: DEMACON ex StatsSA, 2019

Figure 3.5: Size of Non-Residential Buildings Completed per Type and Year for the Musina and Makhado Local Municipalities



Source: DEMACON ex StatsSA, 2019

The historic trends show that in the Musina host municipality a limited amount of property is advertised monthly for sale and that currently only 13 residential properties are on the market. Alternatively, in the Makhado host municipality, more than 200 residential properties are listed for sale. The information also shows that the average sales price for properties in the Musina host municipality rose between 2010 and 2017 after which in 2018 the sales price drastically reduced.

When considering the number of residential buildings and non-residential space completed in both host municipalities, it can be observed that developmental activity for residential and non-residential development is occurring in the Makhado Local Municipality. On average more than 500 residential buildings are completed annually compared to the Musina Local Municipality which only completes on average 6 residential buildings.

Non-residential space development also occurs at a steady pace in the Makhado Municipality whereby on average more than 5 500 m² of non-residential space is completed annually. The Musina Municipality also experienced continued (although sporadic) completion of non-residential space since 2008 at an average rate of 2 129 m² per year.

The information shows that in the Musina host municipality permanency of residence is more stable than in the Makhado host municipality. It should also be noted that developmental activity in the Makhado Municipality far outpaces that of the Musina Municipality. The reason for this is that subsidised and affordable housing development has steadily been implemented in the Makhado Municipality as appose to the Musina Municipality where little to no affordable and subsidised housing is being constructed.

The average sales price of properties is also flat when compared to other urban localities thus indicating limited growth in regard to property prices in the area.

The following maps provide an indication of urban expansion areas for the prominent urban towns of the host municipalities.

3.4 SYNTHESIS

The following provides a concise overview of Chapter 2 in order to outline the key salient factors, influences and trends impacting on economic, market and property development in the host municipalities and broader national and global economic landscape.



NATIONAL, DISTRICT AND LOCAL CONTEXT

- ✓ The Musina area is identified as a rural service point by the NSDF, whilst the Makhado area is identified as an urban growth point.
- ✓ The role of the Makhado area is to be an urban-rural anchor providing essential social economic services to surrounding rural communities. Linkages should be promoted to encourage accessibility.
- ✓ The Musina and Louis Trichard towns are identified as provincial growth points by the local and provincial spatial development frameworks.
- ✓ The N1 highway is considered the primary corridor for both host municipalities and aligns to future investment expectations related to logistics and industrial development.
- ✓ The Musina host municipality is home to the logistics section of the Musina-Makhado SEZ. The Limpopo Eco-Industrial Hub is also planned north of the Musina town in order to link logistics and international trade to the proposed hub.
- ✓ The housing backlog in the host municipalities is in excess of 16 000 households. The host municipalities are not accredited to implement subsidy housing projects thus backlogs are dependent on provincial planning, funding and implementation.



PROPERTY TRENDS

- ✓ Property development activity occurs more frequently in the Makhado Municipality than in the Musina Municipality. To a large extent the development activity in Makhado can be attributed to subsidised and affordable housing development.
- ✓ Although the developmental activity in the Musina Municipality is stagnant, property sales in the area is relatively active. In 2018 more than 180 properties were sold in the municipality.
- ✓ Ownership stability is also more prominent in the Musina Municipality when considering the number of properties advertised for sale. Currently only 13 residential properties are listed for sale in the Musina Municipality as appose to the more than 200 properties in the Makhado Municipality.
- ✓ Development of non-residential space (office, retail and industrial) maintained steady development levels in the Makhado Municipality as appose to the Musina Municipality which experienced more sporadic development trends.
- ✓ More than 5 500 m² of non-residential space is completed in the Makhado Municipality annually and is specifically concentrated in the development of shopping and industrial space. The Musina Municipality completes on average more than 2 100 m² of non-residential space primarily in shopping and industrial space.

MANUFACTURING AND METALLURGICAL SECTOR ANALYSIS



4 MANUFACTURING AND METALLURGICAL SECTOR ANALYSIS

4.1 INTRODUCTION

The following chapter seeks to provide an **overview of manufacturing and metallurgy in South Africa** with specific focus on identifying the metallurgical sector context within which the MMEMSEZ will function once implemented.

The SEZ intends to implement a variety of metallurgical operations that include, but is not limited to:

- ✓ A ferrochrome plant (production of ferrochrome metal),
- ✓ A ferrosilicon plant (production of ferrosilicon metal),
- ✓ A pig iron plant (production of pig iron metal),
- ✓ A steel plant (production of mild steel metal), and
- ✓ A stainless-steel plant (production of stainless steel).

In support of the above-mentioned metallurgy operations, the following activities are proposed in support of production:

- ✓ Thermal power plant (the production of energy/electricity in support of intended metallurgical operations) ,
- ✓ Coking plant (for use as an energy generator and chemical additive in the production of metals), and
- ✓ Lime plant (used as a flux component to remove impurities in metals).

The purpose is to **identify the current manufacturing and metallurgical context in South Africa** and the role that metallurgy plays in the manufacturing sector of the national economy.

The section also seeks to identify the role of metallurgy (steel/metal manufacturing) within a provincial and local context in order to determine the extent to which metallurgy plays a role in localised environments.

Additionally, the section focuses on determining the potential market gap associated with the proposed SEZ and its operations from a regional and local perspective.

The information assists with understanding the **importance and relevance of metallurgy and manufacturing** within the various spheres of the economy and allows for identifying the contextual background to metallurgy operations.

The section thus focuses on the manufacturing section of the national, provincial and local economy with reference to specific metal manufacturing activities and information.

The following sections provide a concise overview of the manufacturing and metallurgy sectors in terms of:

01	National, Provincial and Local Manufacturing Sector Context	
02	Role and Function of Metallurgy in South Africa	
03	Special Economic Zones in South Africa	
04	Synthesis	

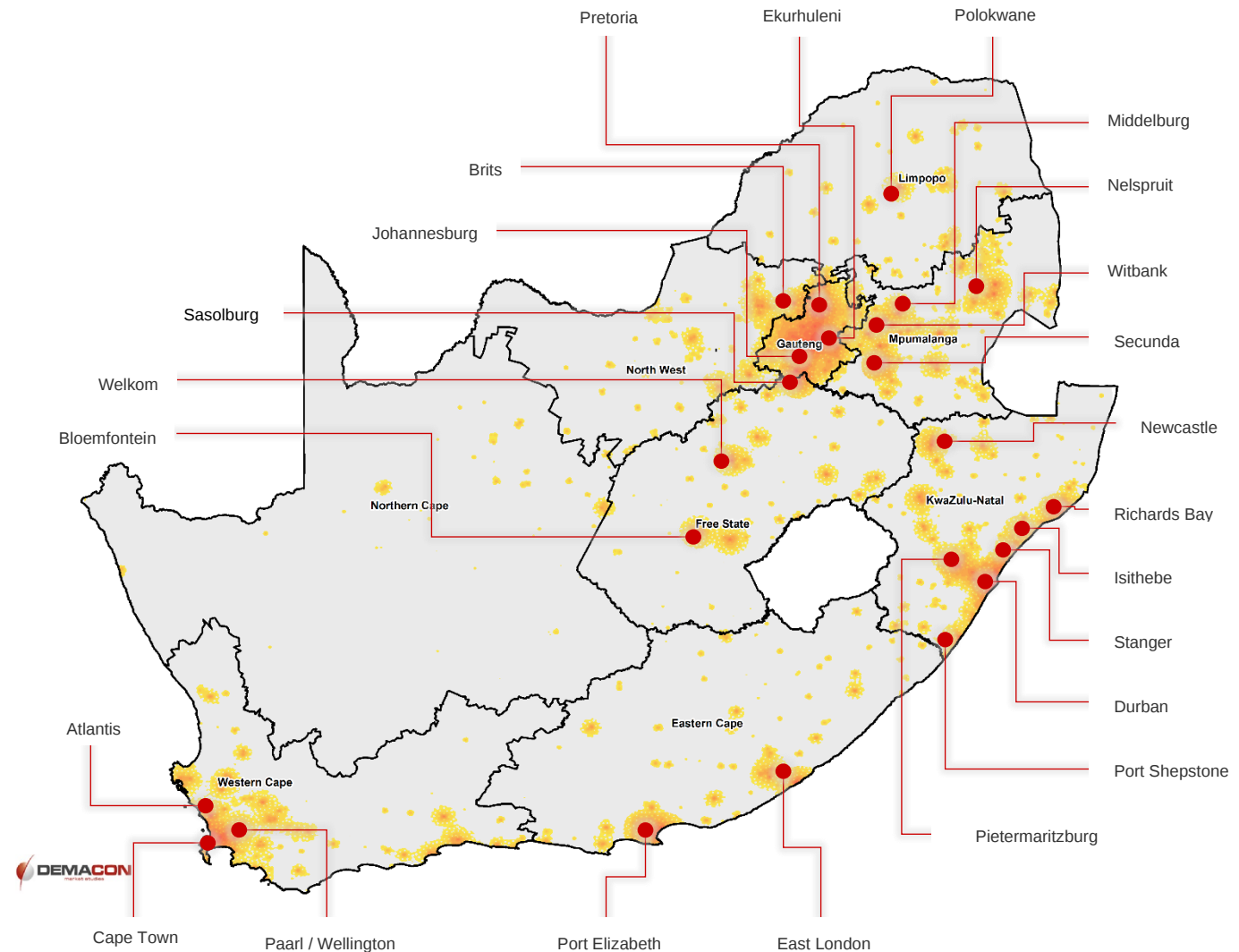
4.2 NATIONAL MANUFACTURING SECTOR CONTEXT

Based on the primary output of operations proposed as part of the MMEMSEZ, the following section considers the manufacturing sector of the South African, Limpopo Province and Host municipalities.

Because the metallurgical operations at the SEZ seeks to produce various metal related products, it is essential to consider operations in light of the manufacturing sector so as to determine the role and function of metallurgical operations specific to the project within the manufacturing sector.

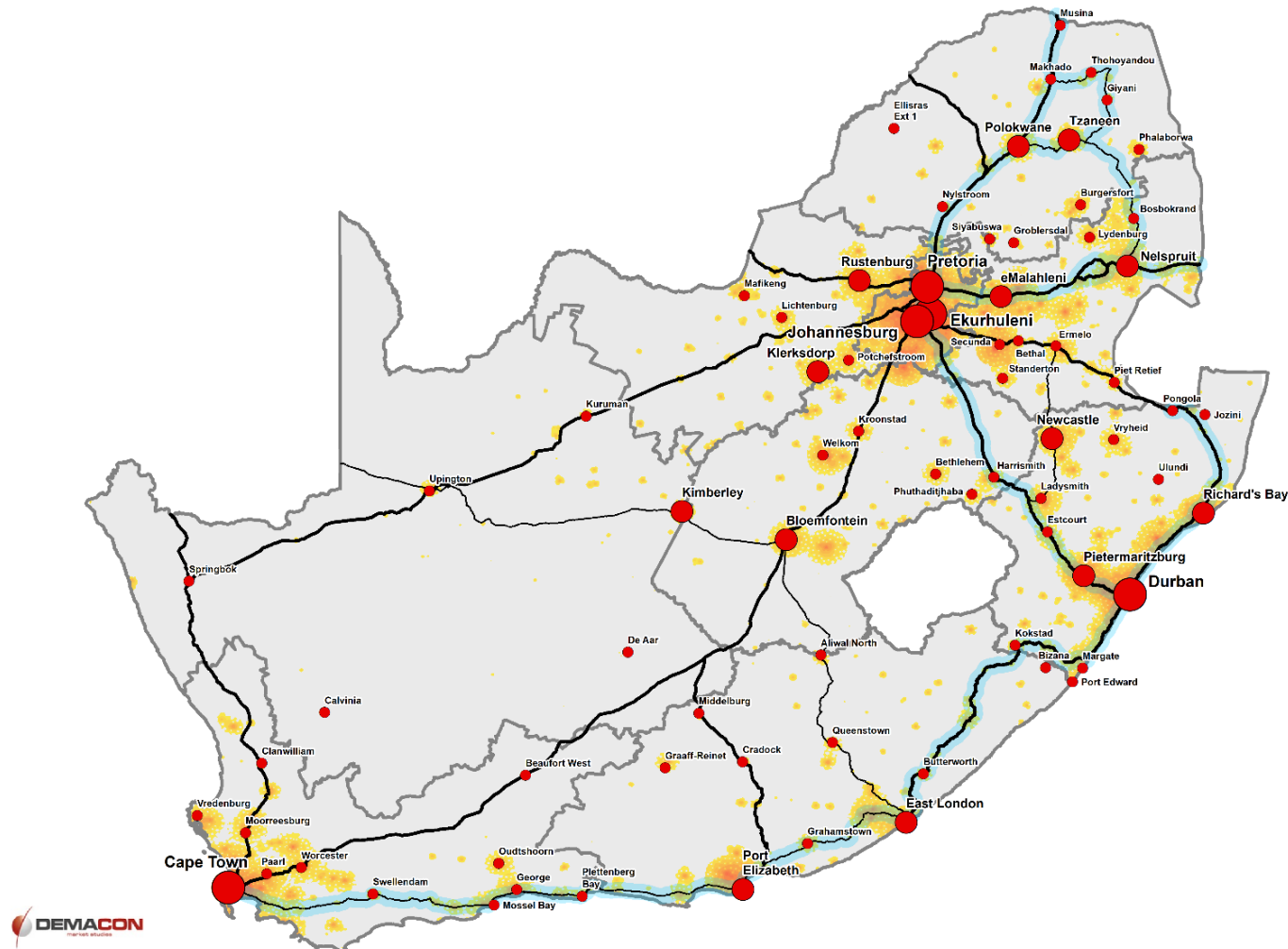
The following map provides an overview of the distribution of manufacturing activities throughout South Africa based on GVA output per Meso Zone. The map seeks to show the **concentration of manufacturing output** and assists with the identification of primary manufacturing nodes. The distribution of manufacturing nodes is used to determine the context of the Musina-Makhado SEZ in relation to major manufacturing areas.

Map 4.1: Distribution of Manufacturing Output and Major Manufacturing Nodes



Apart from the distribution of manufacturing sector output, the relationship which the manufacturing sector has with NSDF identified national nodes and corridors provides an indication of the future direction and concentration of industrial and manufacturing activities. The NSDF has identified nodes at varying scales and importance throughout the country, these include national as well as urban regions, urban nodes of national importance and regional development anchors. The NSDF also identifies roads of national and regional importance and national development corridors.

Map 4.2: Distribution of Manufacturing Sector output in relation to National Spatial Development Framework Nodes and Corridors

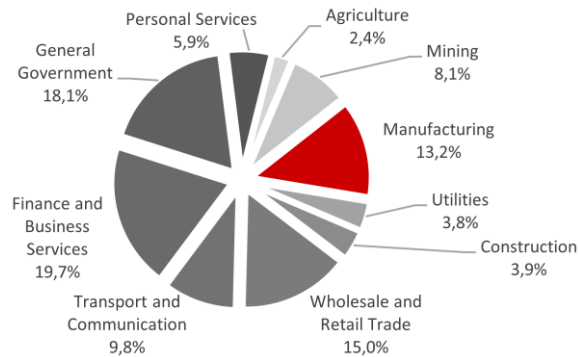


Source: DEMACON ex CSIR and NSDF, 2019

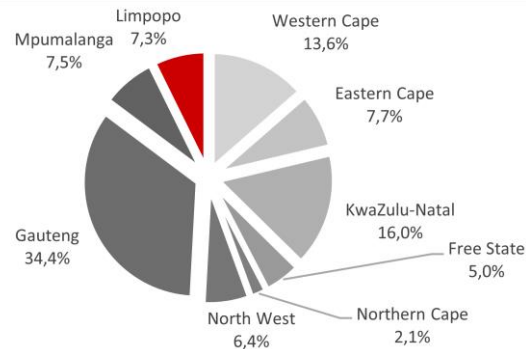
Figure 4.1: National Manufacturing Sector Overview



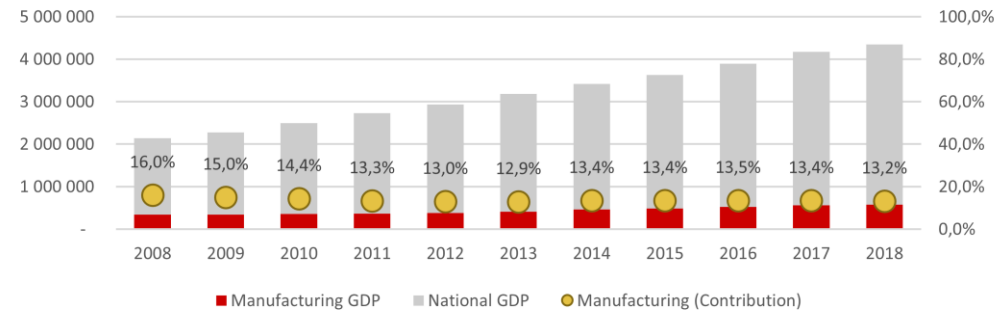
MANUFACTURING PROPORTIONAL CONTRIBUTION



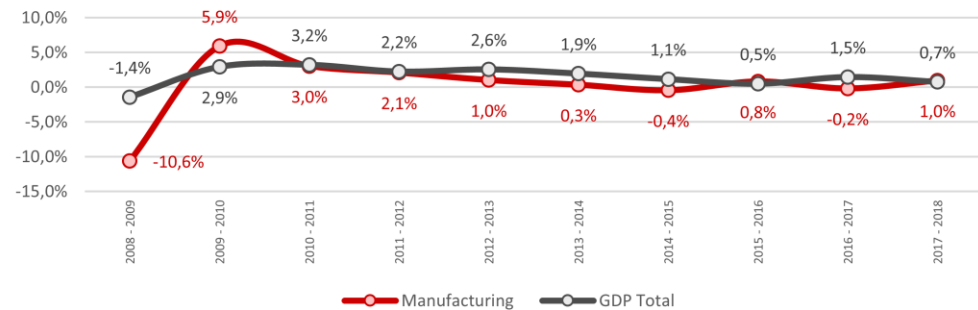
PROVINCIAL MANUFACTURING PROPORTIONAL CONTRIBUTION



MANUFACTURING GDP PROPORTIONAL CONTRIBUTION AND GROWTH



MANUFACTURING GDP AVERAGE ANNUAL GROWTH RATE



MANUFACTURING EMPLOYMENT PROPORTIONAL CONTRIBUTION AND GROWTH

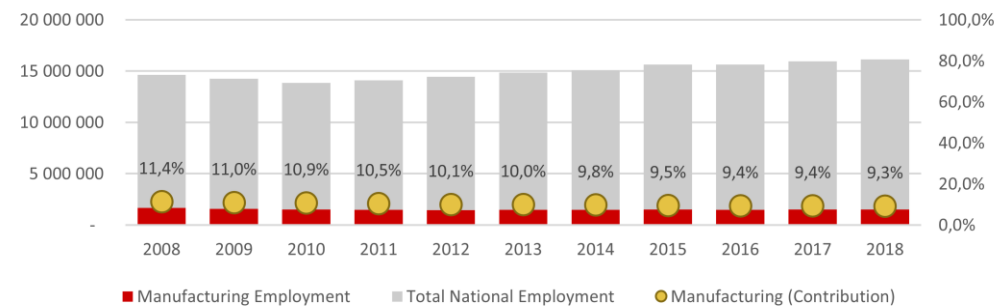


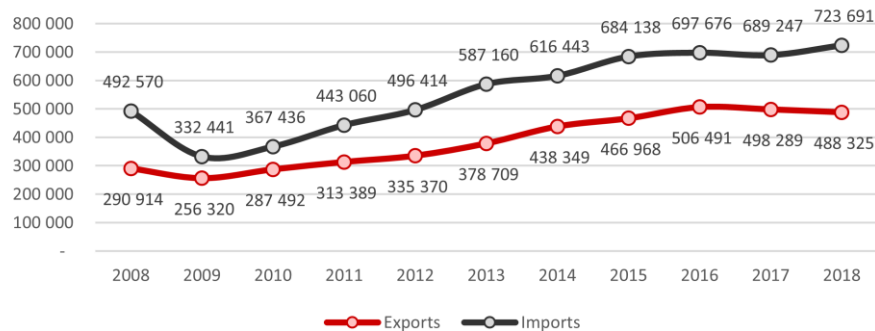
Figure 4.2: National Manufacturing Sector Imports and Exports

NATIONAL MANUFACTURING SECTOR IMPORTS AND EXPORTS

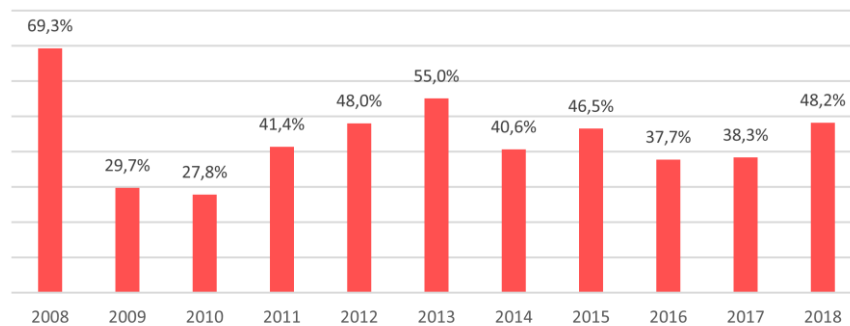
→ EXPORTS VALUE **R488 325**
2018 - (R/million)

← IMPORTS VALUE **R724 691**
2018 - (R/million)

HISTORICAL IMPORT AND EXPORT TREND FOR THE MANUFACTURING
SECTOR (R/million)



HISTORICAL PROPORTIONAL RATIO OF IMPORTS TO EXPORTS FOR THE
MANUFACTURING SECTOR (R/million)



PRIMARY MANUFACTURING SECTOR

The manufacturing sector of the South African economy is one of the largest contributors to national capital formation. The manufacturing sector has historically played a significant role in the shaping of the national economy due to the abundance of natural resources as well as the historically strong agricultural and trade sectors.

Map 3.1 shows that manufacturing throughout the country is primarily concentrated in **metropolitan regions**. Dominantly, the Gauteng Province shows the highest concentration of manufacturing GVA output which is proportionally concentrated in the City of Johannesburg, City of Tshwane and Ekurhuleni metropolitan areas.

Throughout the country other metropolitan regions such as the City of Cape Town, eThekweni, Nelson Mandela Bay, Buffalo City and Mangaung have sizeable manufacturing sector output. Unlike the Gauteng Province which has historically benefitted from mining activity as a key driver to the development of manufacturing activities, port cities such as eThekweni, Buffalo City, Nelson Mandela Bay and Cape Town have a competitive advantage because of the availability of shipping ports for exports.

Inland manufacturing hubs such as Welkom, Newcastle, Witbank, Middelburg and Brits have largely benefitted from mining activity as a driver for the manufacturing industry whilst, nodes such as Sasolburg and Secunda benefit from petrochemical products produced by SASOL. Manufacturing hubs in Polokwane and Nelspruit have benefitted from the strategic locations of the cities in relation Gauteng and bordering countries.

Although the spatial perspective shows that manufacturing activity is distributed beyond primary nodal and metropolitan areas, the manufacturing activity is largely localised or provide intermediate products in the minerals beneficiation value chain.

In 2018 the manufacturing sector as a whole contributed R572.9 billion or 13.2% to the South African economy. Although the sector has shown growth in the total GDP produced between 2008 and 2018, the proportional

contribution made by the sector to the total output of the national economy has steadily been decreasing.

In 2008 the manufacturing sector proportionally contributed 16.0% to the national economy, whilst in 2018 the sector contributed 13.2%. The change in proportional share contribution can be attributed to shifts in other major economic sectors such as wholesale and retail trade and general government.

Greater accessibility to retail activities across South Africa has boosted growth in GDP of the sector, whilst the general growth of government in terms of size and expenditure has generated substantial expansion.

The national economy between 2008 and 2018 has shown an average annual growth rate of 1.5% which is substantially greater than the manufacturing sector which showed nominal growth of 0.2% for the same time-period.

The manufacturing sector has largely been influenced by events in the agriculture, mining and steel industries whereby recent droughts across the country has slowed agricultural output and thus slowed the manufacturing of food and related products.

Additionally, the mining sector has seen drastic downscaling because of the weak commodity prices, increasing electricity/utility prices and decreasing minable mineral resources, thus leading to decreased output and employment downscaling. Decreasing mining productivity also hampers the manufacturing sector which is reliant on outputs from mining sector.

Lastly, major changes in the demand for steel and other ferrous metal products, especially from China and domestically has hampered the production of steel and metal-based products.

China, which is one of the largest producers of steel related products, is also one of the major countries to which local ferrous-metal producers export to. Due to a recent slowdown in national economic growth and decelerating development demand in the country, combined with a saturated steel

market internationally and domestically, local steel producers have limited production output and so influences the rate of growth of the sector.

Total exports for 2018 from the manufacturing sector totalled R488.3 billion, whilst imports for the sector reached R723.7 billion. The value of exports and imports in the manufacturing sector has experienced an increasing trend between 2008 and 2018 with imports accelerating in value from 2017 whilst exports started to decline from 2016. On average, the value of imports are 43.9% higher than the value of exports.

In line with the decreasing share of national GDP output and decelerating GDP growth, employment in the manufacturing sector has also steadily been decreasing.

In 2008 the sector employed in excess of 1.6 million people. In 2018 employment in the manufacturing sector has decreased to nearly 1.5 million people, shedding almost 175 000 jobs.

The proportional contribution by the sector to employment in the country has as a result also decreased whereby the sector contributed 9.3% to total employment in the country in 2018 compared to 11.4% in 2008.

SECONDARY MANUFACTURING SECTORS

The manufacturing sector consists of a number of secondary (sub-sectors) sectors that focus on different market segments. The following section seeks to explore the composition of the national manufacturing sector in order to provide background and understanding as to the composition of the sector and role of metallurgy.

The section also investigates secondary manufacturing sectors within which the MEMSEZ will function. The purpose is to provide a broader view of the national economy's dependence and incorporation of activities specific to the SEZ.

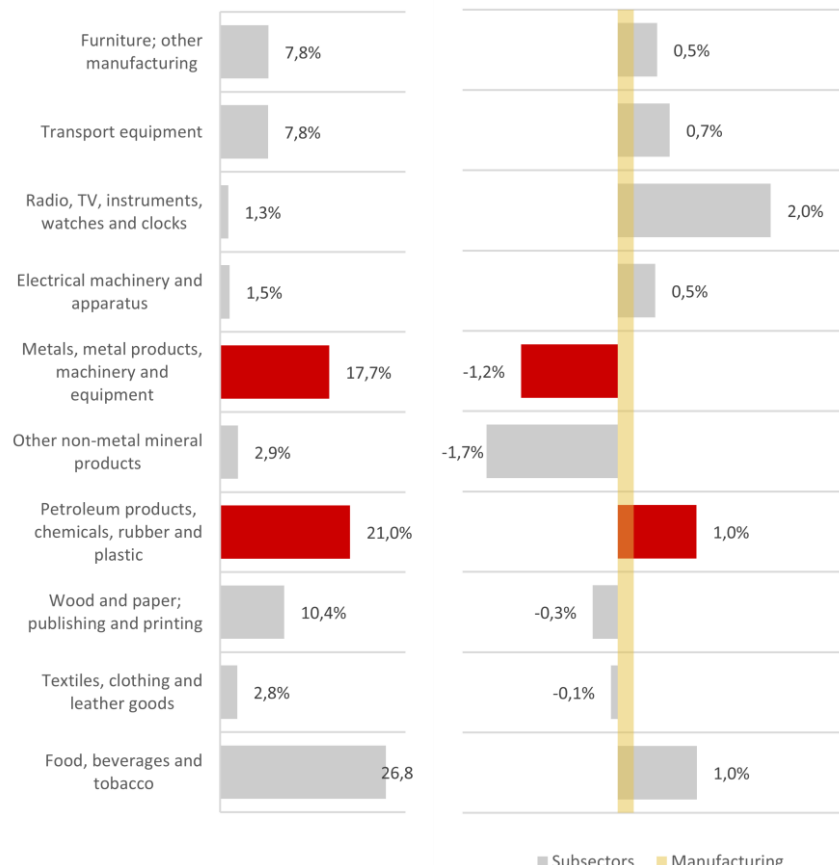
Figure 4.3: National Manufacturing Sector Structure and Growth

MANUFACTURING SUB-SECTORS

The proposed operations as part of the Musina-Makhado SEZ primarily fall within the **Coke, Petroleum Products and Nuclear Fuel** and **Basic Iron and Steel Products; Casting of Metal** sub-sectors of the Manufacturing Sector.

STRUCTURE OF THE MANUFACTURING SECTOR

AVERAGE ANNUAL GROWTH OF MANUFACTURING SUB-SECTORS



MANUFACTURING SUB-SECTOR ANALYSIS

The manufacturing sector is structured in accordance with 10 sub-sectors that produce output in the economy across a wide range of tertiary sectors. In accordance to the proposed operations as part of the MMEMSEZ (excluding support services such as electricity generation) secondary sectors such as Coke, petroleum and nuclear fuel (contained in the petroleum products, chemicals, rubber and plastic primary sub-sector) and basic iron and steel products (contained in the metals, metal products, machinery and equipment primary sub-sector) are of importance and should be considered as part of this analysis.

The sub-sectors specifically speak to the output produced by the coking, ferrochrome, ferrosilicon, pig iron, steel and stainless-steel plants.

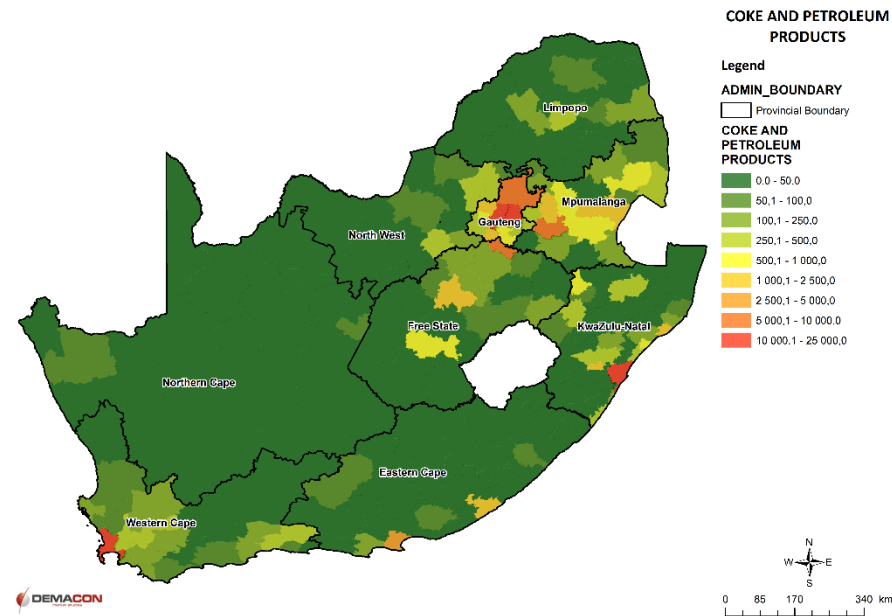
Apart from the food, beverages and tobacco sub-sector (26.8%), the petroleum products, chemicals, rubber and plastic (21.0%) and metals, metal products, machinery and equipment (17.7%) sub-sectors contribute the second and third largest proportional contributions to the total output of the manufacturing sector in 2018.

The petroleum products, chemicals, rubber and plastics sub-sector experienced above average annual growth (1.0%) between 2008 and 2018 when compared to the manufacturing sector as a whole (0.2%).

The metals, metal products, machinery and equipment sub-sector however experienced negative growth over the same period (-1.2%). As mentioned previously numerous domestic and international factors have influenced the iron industry recently and as a result the sub-sector has undergone a contraction trend.

The following maps provide a spatial overview of the total GVA output for the coke, petroleum products etc. and metals and metals products sub-sectors per local municipality (fine-grained information is not available).

Map 4.3: Distribution of Coke and Petroleum Products Production (GVA - R/million)

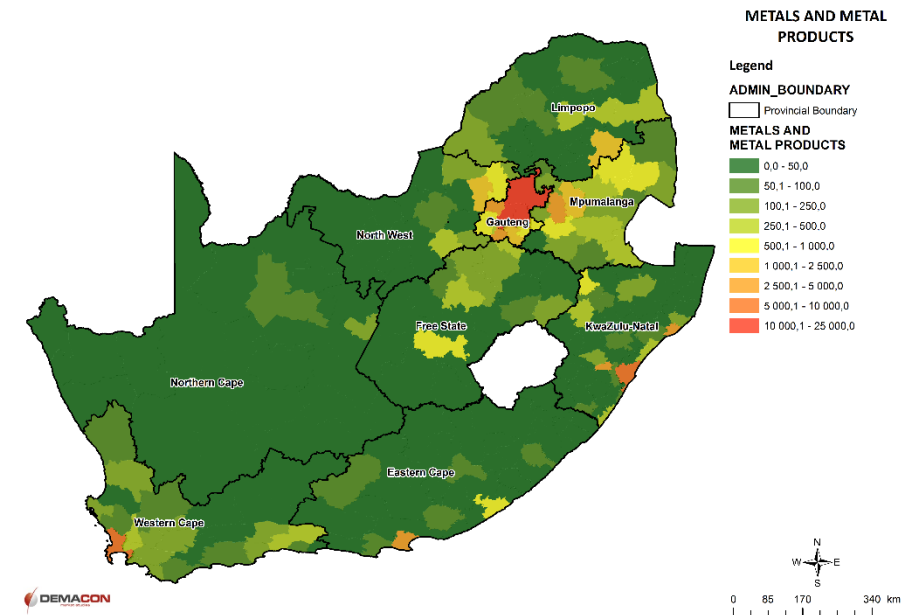


Source: DEMACON GIS, 2019

The data shows that the output of coke and petroleum products are primarily concentrated in the Gauteng and Mpumalanga Provinces, as well as in the major metropolitan regions of the country. It should be noted that due to data limitations the production of coke products cannot be separated from petroleum products.

The concentration of coke and petroleum products in the Gauteng and Mpumalanga provinces are mainly on account of the distribution of SASOL production plants and coal mines. The export of coking products also forms part of the exports for the country thus a high concentration of output is generated by port cities due to the processing and export of these products.

Map 4.4: Distribution of Metals and Metal Products (GVA - R/million)



Source: DEMACON GIS, 2019

The data shows that output for metals and metal products are primarily concentrated in the Gauteng and Mpumalanga Provinces as well as major metropolitan areas.

The distribution of major metals processing plants is concentrated in the Gauteng Province as well as select locations such as Newcastle, Durban and Pietermaritzburg.

The concentration of activities in and around the Gauteng Province provides a competitive advantage with regard to the production of metal products because the agglomeration of these production areas drives growth of manufacturing activities in other sectors and also assists with growing the construction sector.

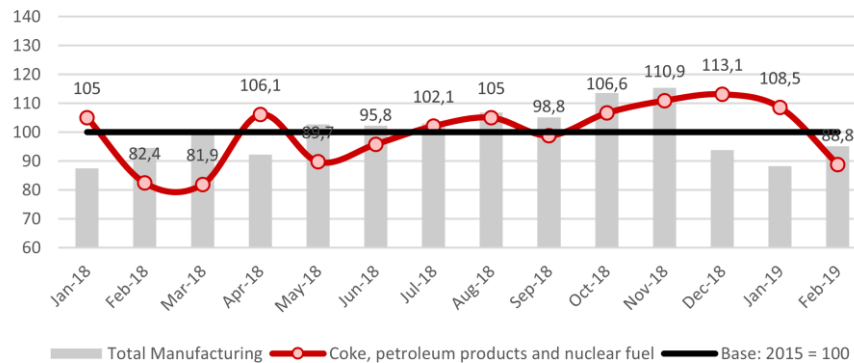
Figure 4.4: Coke, Petroleum Products and Nuclear Fuel Sub-Sector Overview



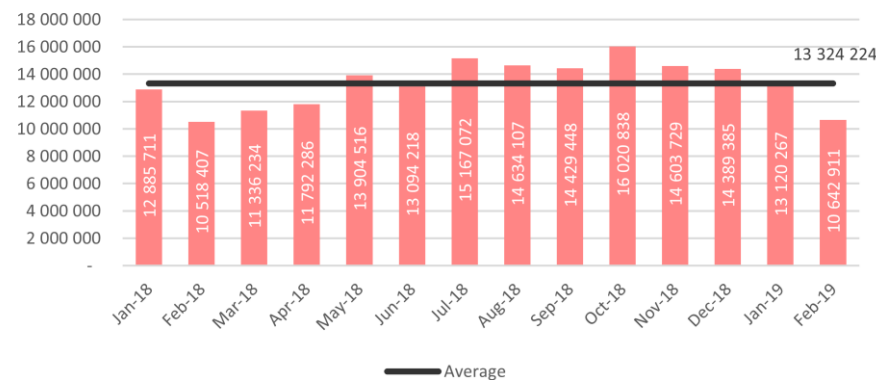
COKE, PETROLEUM PRODUCTS AND NUCLEAR FUEL

	GVA (R/million)	46 031		Jobs	27 797
	Contribution to total GVA	8.0%		Contribution to total employment	1.9%
	Avg. Annual growth rate (10-years)	4.3%		Avg. Annual growth rate (10-years)	-1.7%

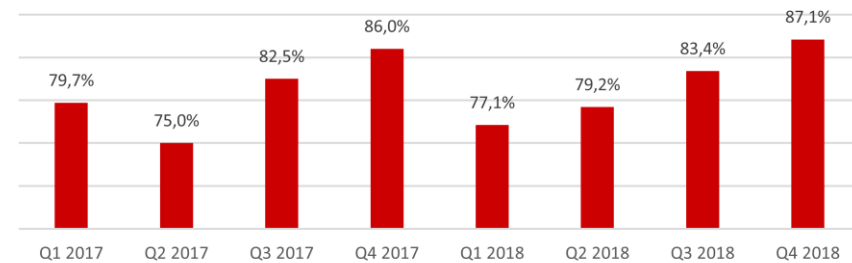
PHYSICAL VOLUME OF PRODUCTION (INDEX – BASE 2015 = 100)



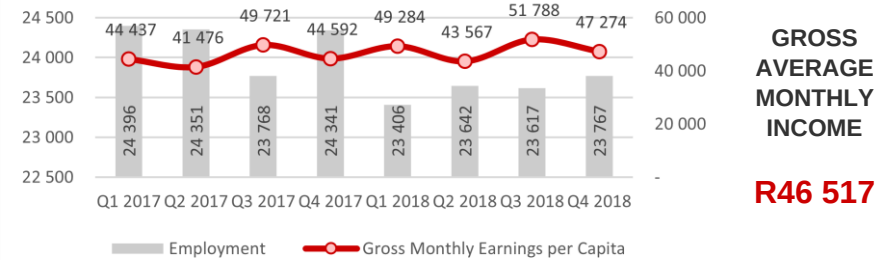
TOTAL VALUE OF SALES (R/1000)



UTILISATION OF PRODUCTION CAPACITY (%)



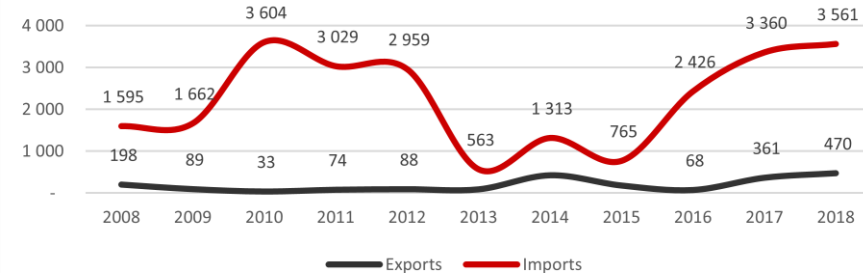
FORMAL EMPLOYMENT AND RENUMERATION TREND



GROSS
AVERAGE
MONTHLY
INCOME

R46 517

TOTAL EXPORT AND IMPORT TREND (R/million)



TOP COUNTRIES EXPORTED TO

- France
- Germany
- United States of America

TOP COUNTRIES IMPORTING FROM

- Taiwan
- Finland
- Malta

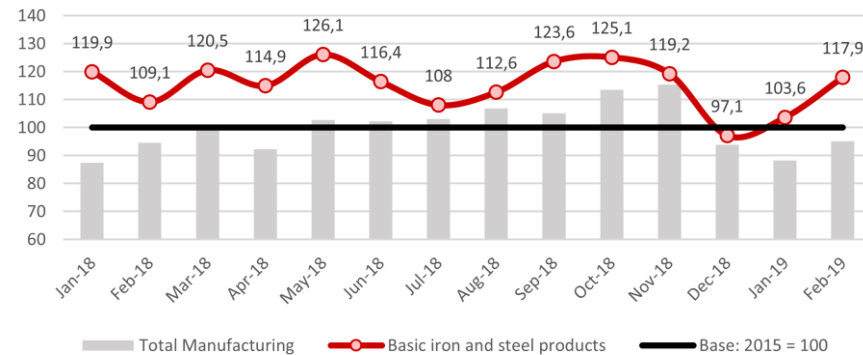
Figure 4.5: Basic Iron and Steel Products; Casting of Metal Sub-Sector Overview



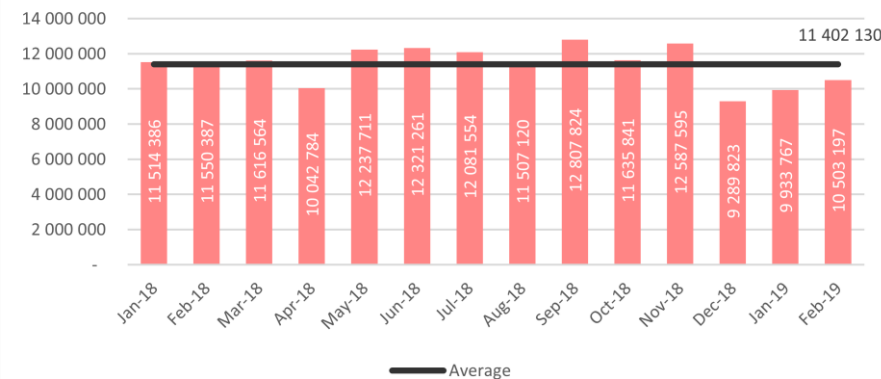
BASIC IRON AND STEEL PRODUCTS; CASTING OF METAL (2018)

	GVA (R/million)	20 267		Jobs	41 239
	Contribution to total GVA	3.5%		Contribution to total employment	2.8%
	Avg. Annual growth rate (10-years)	-2.8%		Avg. Annual growth rate (10-years)	-3.9%

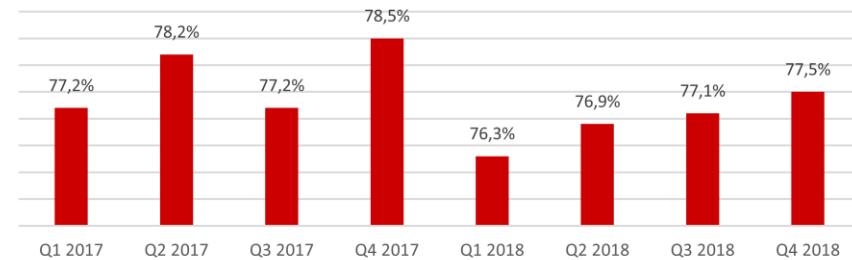
PHYSICAL VOLUME OF PRODUCTION (INDEX – BASE 2015 = 100)



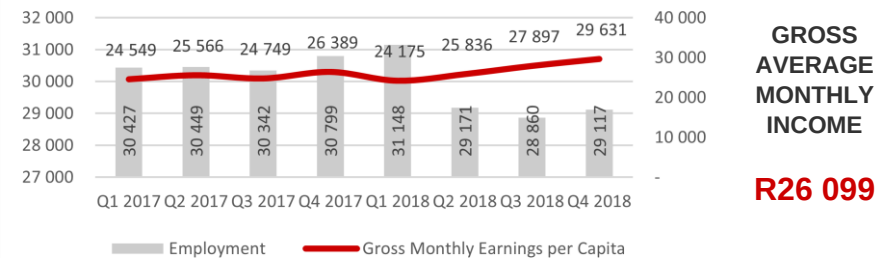
TOTAL VALUE OF SALES (R/1000)



UTILISATION OF PRODUCTION CAPACITY (%)



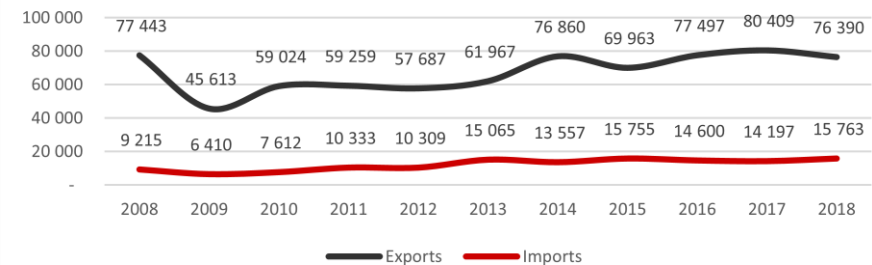
FORMAL EMPLOYMENT AND RENUMERATION TREND



GROSS
AVERAGE
MONTHLY
INCOME

R26 099

TOTAL EXPORT AND IMPORT TREND (R/million)



TOP COUNTRIES EXPORTING TO

1. China
2. United States of America
3. Indonesia

TOP COUNTRIES IMPORTING FROM

1. Taiwan
2. Germany
3. Sweden

4.3 PROVINCIAL, DISTRICT AND LOCAL MANUFACTURING CONTEXT

Apart from reviewing the manufacturing sector from a national perspective, due consideration can be given to the provincial, district and local contexts of manufacturing. The host municipalities, Musina and Makhado Local Municipalities, are incorporated as part of the local context because these local economic regions contain the MMEMSEZ. Additionally, a contextual review of the Vhembe District is undertaken due to the district economy containing the host municipalities. Lastly, focus is shifted to the Limpopo Province in order to provide a broader perspective of the provincial contribution and status with regard to manufacturing.

The following infographics provide a concise overview of the size, contribution and average annual growth rate of GVA and employment in the manufacturing sector for the different economic regions mentioned above.

Figure 3.6 shows that the manufacturing sector of the Limpopo Province contributes in excess of R959 million to the national economy. Proportionally, the province contributes 7.3% to the national economy. The Vhembe District is the smallest proportionally contributing district to manufacturing output for the province, contributing 12.1% or, R116 million, to total manufacturing GVA in 2018.

The host municipalities play varying roles in regard to manufacturing GVA contribution to the district economy whereby, the Makhado host municipality contributes more than 60% to the manufacturing GVA of the district as appose to the Musina host municipality which contributes nearly 10%. In total the Makhado and Musina host municipalities contribute R703 million and R116 million respectively.

Although the Limpopo Province and Vhembe District showed a contraction in the manufacturing sector between 2008 and 2018, the Makhado and Musina host municipality manufacturing sectors expanded during the same period.

Figure 4.6: Provincial, District and Local Manufacturing Sector Profile

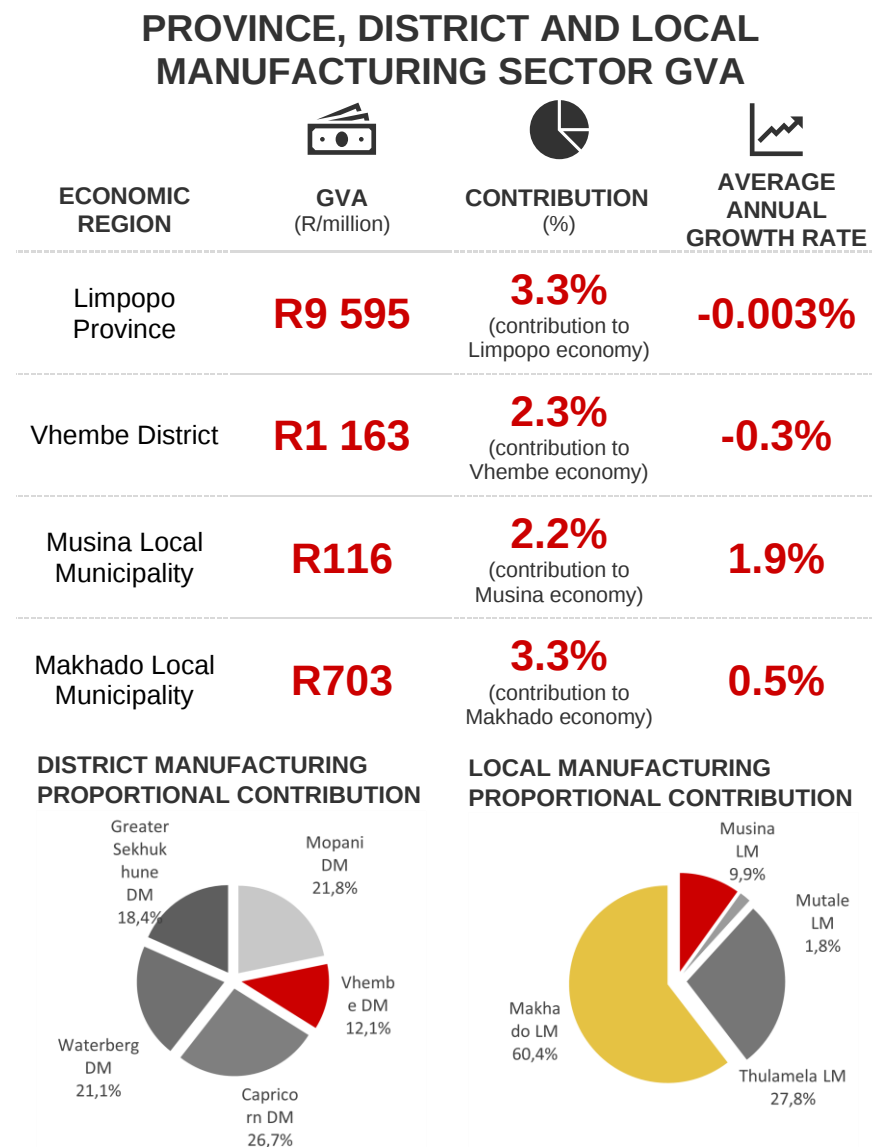
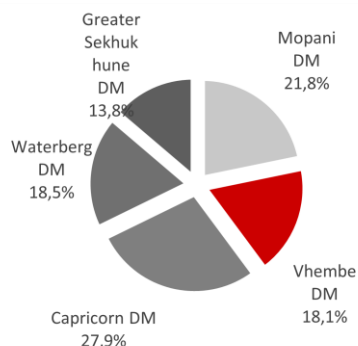


Figure 4.7: Provincial, District and Local Manufacturing Sector Profile

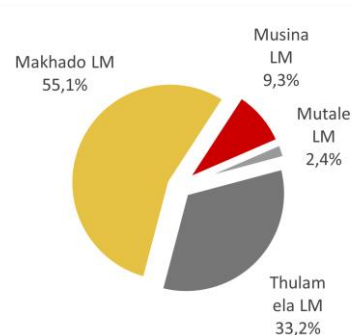
PROVINCE, DISTRICT AND LOCAL MANUFACTURING SECTOR EMPLOYMENT

ECONOMIC REGION	JOB	CONTRIBUTION (%)	AVERAGE ANNUAL GROWTH RATE
Limpopo Province	61 667	5.7% (contribution to Limpopo jobs)	-1.1%
Vhembe District	11 143	4.7% (contribution to Vhembe jobs)	-2.2%
Musina Local Municipality	1 039	3.5% (contribution to Musina jobs)	-0.1%
Makhado Local Municipality	6 136	6.2% (contribution to Makhado jobs)	-0.9%

DISTRICT MANUFACTURING PROPORTIONAL CONTRIBUTION



LOCAL MANUFACTURING PROPORTIONAL CONTRIBUTION



The manufacturing sector at all levels contributes nominally to the total GVA output of each economic geography. In a similar fashion, the contribution by the manufacturing sector to the total amount of jobs per geographic region is marginal.

For the Limpopo Province the manufacturing sector proportionally contributes 5.7% or 61 667 jobs to total employment in the province. The Limpopo Province also contributes 4.1% to the total number of manufacturing jobs in the country. The Vhembe District's manufacturing sector proportionally contributes 18.1% (third largest contributor) to the Limpopo Province's manufacturing sector. The district's manufacturing sector only contributes 4.7% or 11 143 jobs to the total employment of the district.

The host municipalities show a similar trend indicating the limited expansion of the sector. The Musina host municipality's manufacturing sector proportionally contributes 3.5% to total employment in the municipality compared to the Makhado host municipality where the manufacturing sector proportionally contributes 6.2% to total employment.

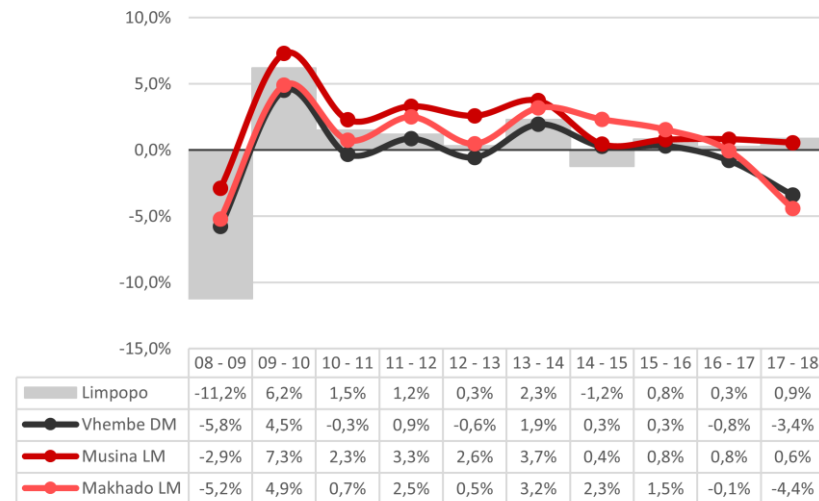
The host municipalities combined proportionally contribute more than 64% to total manufacturing jobs in the Vhembe District. The Makhado host municipality proportionally contributes 55.1% of manufacturing jobs compared to 9.3% by the Musina host municipality.

Although the host municipalities experienced an expansion of the manufacturing sector between 2008 and 2018, jobs in the sector have contracted. The Musina host municipality's manufacturing sector jobs contracted on average by -0.1% annually compared to the Makhado host municipality which contracted by -0.9% annually.

The trend is also apparent at district and provincial levels whereby manufacturing jobs contracted on average by -2.2% in the Vhembe District and -1.1% in the Limpopo Province.

Figure 4.8: Manufacturing Sector GVA and Employment Growth per Economic Geography - 2008 to 2018

MANUFACTURING GVA AVERAGE ANNUAL GROWTH RATE (2008 – 2018)



MANUFACTURING EMPLOYMENT AVERAGE ANNUAL GROWTH RATE

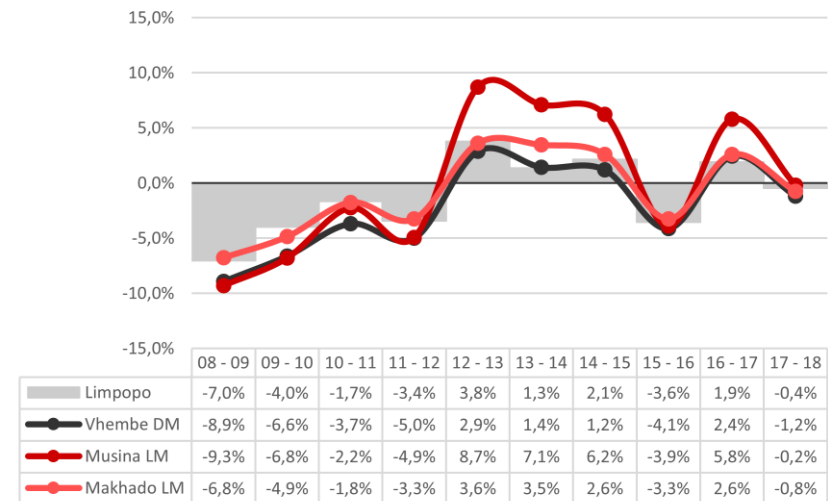
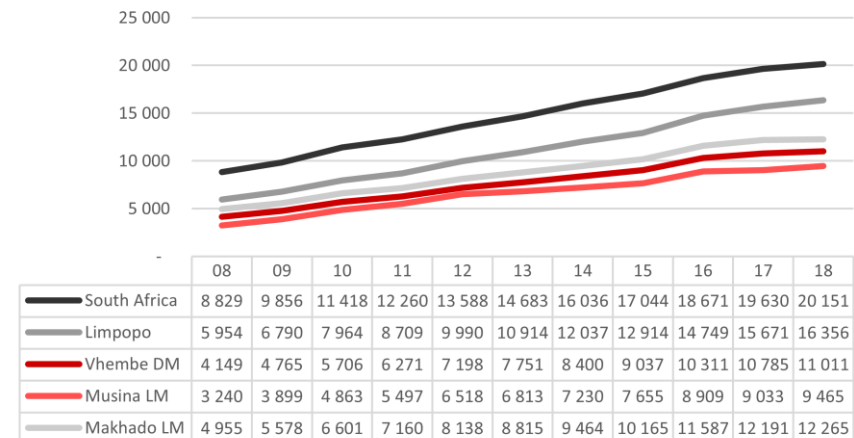


Figure 4.9: Manufacturing Sector Employee Compensation per Economic Geography (2018)

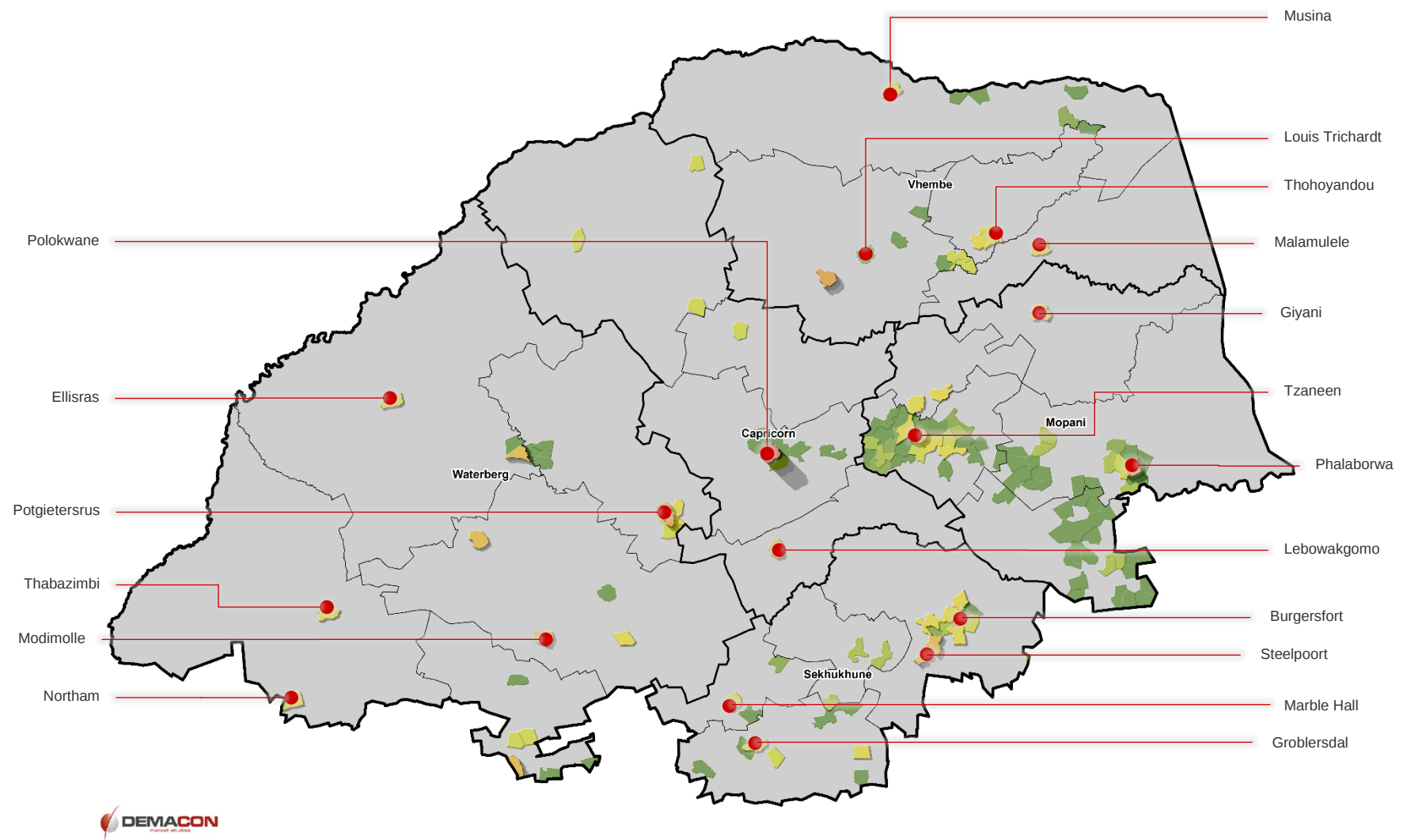
COMPARISON OF EMPLOYEE COMPENSATION IN THE MANUFACTURING SECTOR PER ECONOMIC GEOGRAPHY

ECONOMIC GEOGRAPHY	TOTAL EMPLOYEES	TOTAL MANUFACTURING SECTOR COMPENSATION (2018 R/million)	AVERAGE MONTHLY COMPENSATION (2018)	AVERAGE ANNUAL GROWTH RATE ('08 to '18)
South Africa	1 497 370	R362 075	R20 151	2.5%
Limpopo	61 667	12 103	R16 356	4.3%
Vhembe DM	11 143	1 472	R11 011	2.2%
Musina LM	1 039	R118	R9 465	5.3%
Makhado LM	6 136	R903	R12 265	2.7%

MANUFACTURING COMPENSATION GROWTH (2008 – 2018)



Map 4.5: Distribution of Manufacturing Output and Major Manufacturing Nodes in the Limpopo Province



Source: DEMACON ex CSIR and StatsSA, 2019

4.4 ROLE AND FUNCTION OF METALLURGY IN THE SOUTH AFRICAN CONTEXT

Metallurgy can be considered to be the art and science of extracting metals from their ores and modifying the metals for use in other products. In other words, metallurgy functions as a manufacturing process, or otherwise considered beneficiation process, to transform raw ferro materials into various intermediate or final products related to steel and metals.

In the context of South Africa, the country has historically maintained significantly high concentrations of mineral resources (refer to the map below). The mining industry in the country is well established and produces a range of raw mineral resources that are either locally beneficiated and used or exported, or raw materials are exported for further refinement.

Due to the extensive nature of the mining industry, the country is well positioned in terms of its role in beneficiation of minerals (specifically referring to metallurgy) and the provision of semi-refined and produced products.

The historical economic and infrastructure environment of the country assisted with the establishment of the country as a global ferroalloy producer. The abundance of raw materials coupled with historically cheap and stable electricity, well developed infrastructure and relatively cheap labour has positioned the country as a leading ferrochrome producer, major manganese ore and alloys exporter and producer of vanadium products¹. The country also produces ferrosilicon and silicon metal ore.

The ferrochromium production industry in South Africa is by far the largest contributor in regard to ferroalloys. An abundance of ferroalloy producers currently operate within the country and export the second most (after China) ferrochromium to the world market. The ferrochromium market has been under strain recently due to major changes in the Chinese economy and the demand shown by China for steel related products.

¹ Basson J, Curr TR, Gericke WA, South Africa's Ferro Alloys Industry – Present Status and Future Outlook.

Manganese alloy production in South Africa is a smaller role-player in the broader ferroalloys market of the country. The industry is confined to a limited number of producers and the majority of raw manganese materials are exported to major producers such as China.

Ferrosilicon production in South Africa is a limited industry whereby the majority of ferrosilicon produced in the country is utilised by domestic consumers.

The steel industry in South Africa is a major role-player in the context of local economic growth but is considered a minor global producer of crude and semi-finished steel products.

Abundant raw materials do position the country as a prospective business proposition for Ghana / Germany that nevertheless have strong and exporting manufacturing sectors with a high demand for steel.

In the context of the development of the South African economy this dynamic perpetuates the challenge of beneficiation versus raw materials exports. These challenges are compounded by resource distribution, distance to port and availability of water in a largely semi-arid climate.

The distribution of production plants for ferroalloys are largely market based and therefor are concentrated in the Gauteng Province, with limited producers located in the Limpopo (Polokwane), Mpumalanga (Witbank) and KwaZulu-Natal (eThekweni) provinces (refer to the map below).

As illustrated by the following diagram, metallurgical operations in South Africa are orientated towards markets and the proximity to natural resources as appose to agglomeration or logistical factors. The concept is further highlighted by Map 3.8 which shows the correlation of producers and proximity to markets and resources.

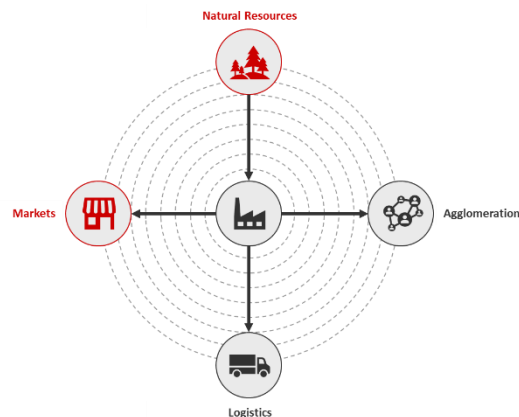
The correlation shows that metallurgical processing plants strongly associate with the largest economic output province in the country –

Gauteng. The proximity to the province allows for ease of access to users of products produced by metallurgical plants as construction and downstream beneficiation industries are to a large degree positioned in the province.

Additionally, metallurgical industries such as ferrochrome and ferrosilicon generally locate within a 50 km to 60 km radius of resource extraction locations compared to steel and ferromanganese producers who on average locate within a 300 km to 350 km radius of resource extraction areas.

One of the primary reasons for steel and ferromanganese industries to locate further from resource locations are because of the proximity of these industries to the Gauteng Province – thus indicating that proximity to markets is preferred as appose to economically isolated locations further from primary markets.

Diagram 4.1: South Africa Metallurgical Operations in the Context of Industrial Location Considerations



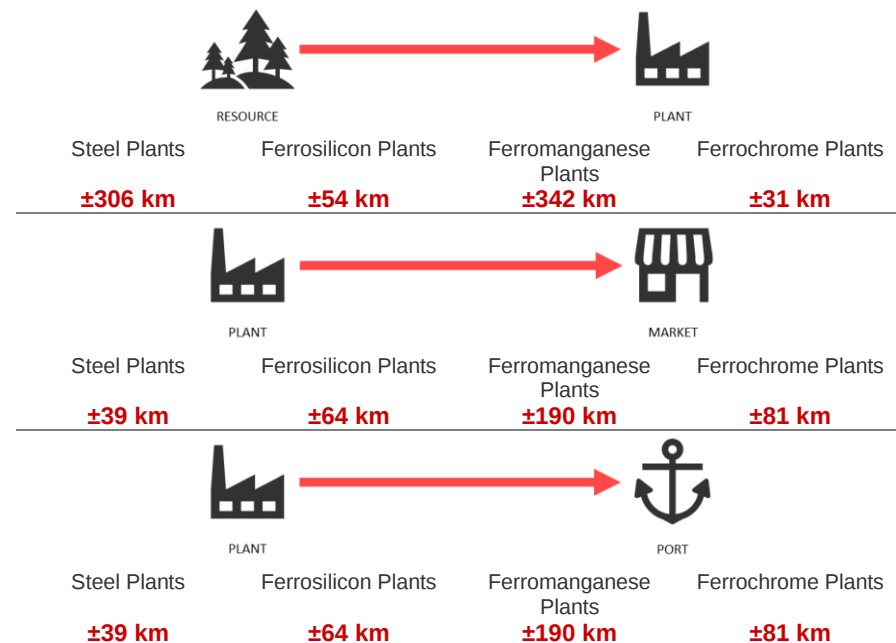
Source: DEMACON, 2019

The location of metallurgical industries primarily in and around the Gauteng Province also affords access to primary logistical routes and modes of transport (rail transport). The ease of access to logistical infrastructure

allows for the ease of access to major exporting ports such as Durban and Richards Bay.

The following diagram provides an indication of the average “as the crow flies” distance between 1) closest resource and processing plant; 2) processing plants and closest market; and 3) processing plants and closest port (export orientation). The information serves as an indication of the relative positioning of existing metallurgical industries relative to key industrial location considerations – as discussed previously.

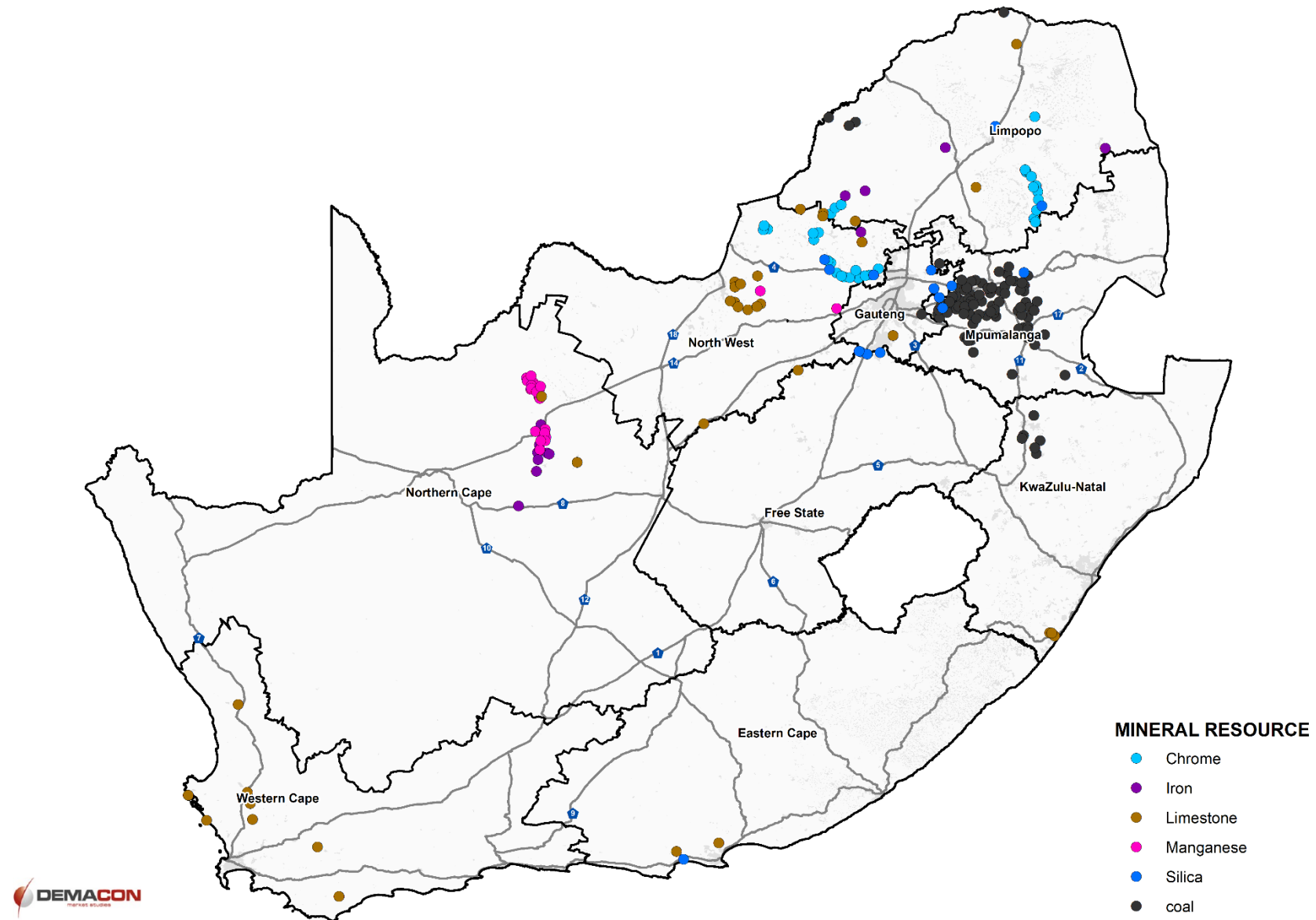
Diagram 4.2: Estimated Average Direct Line Distance Between Metallurgical Plants and Mineral Resources, Markets and Ports



Source: DEMACON, 2019

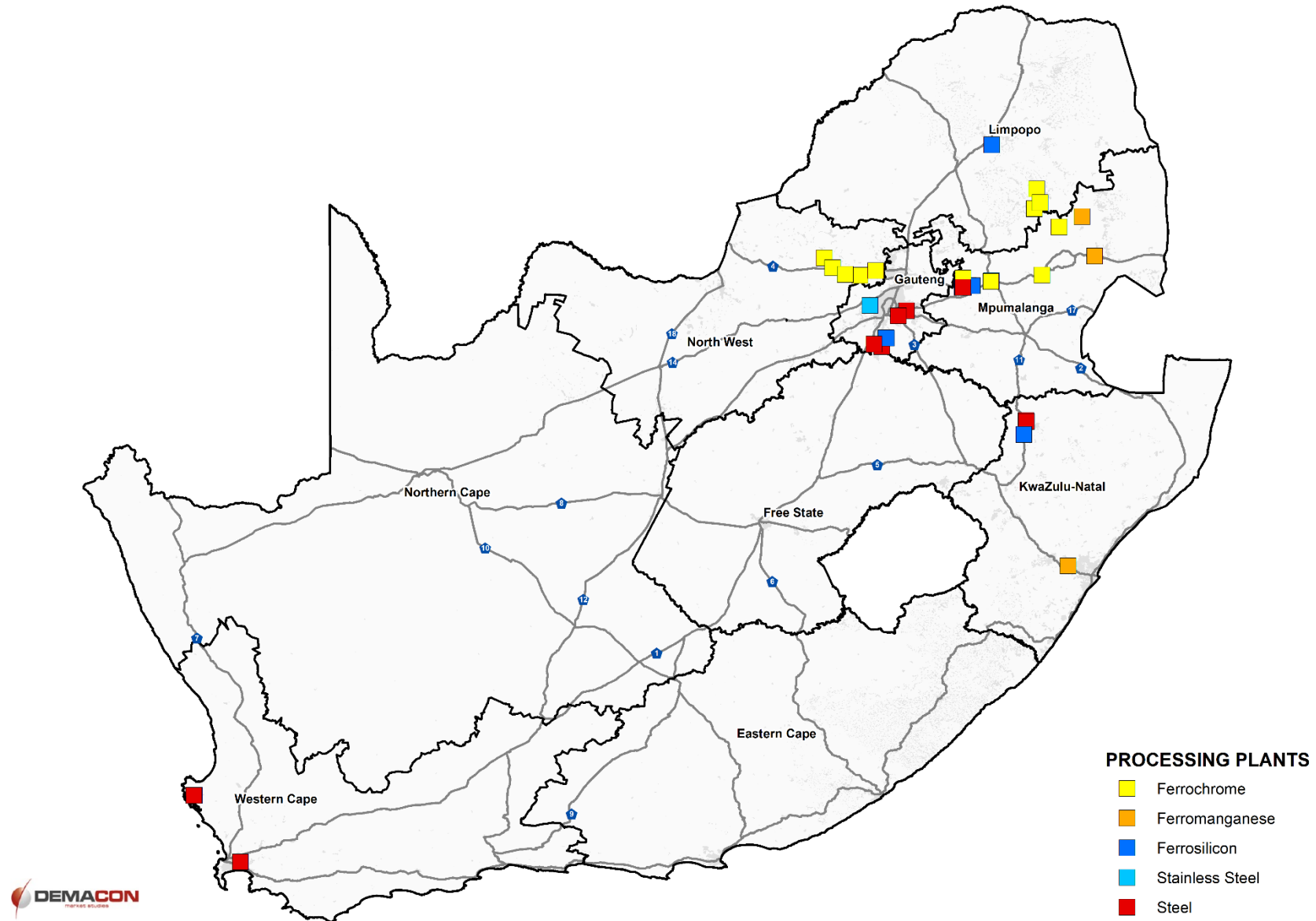
The following infographic pages provide a concise overview of the ferrochrome, ferro-silicon and ferro-manganese industries in South Africa by providing key production and trade information. Additionally, information is supplied on the South African steel industry.

Map 4.6: Distribution of Metallurgical Mineral Resources



Source: DEMACON ex DMR, 2019

Map 4.7: Distribution of Metallurgical Processing Plants



Source: DEMACON GIS and DMR, 2019

4.4.1 FERRO-CHROME MARKET OVERVIEW

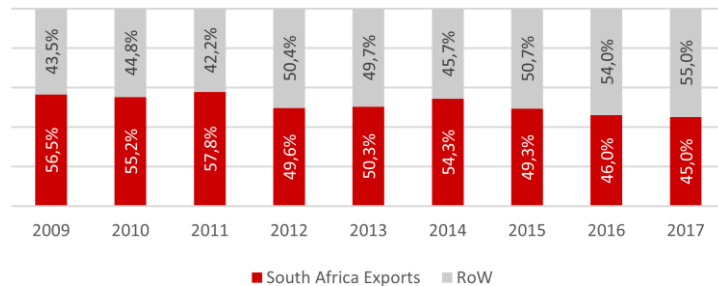
FERRO-CHROME
INDUSTRY OVERVIEWGLOBAL
IMPORTANCE

In 2017 global ferro-chrome production rose by 8.7% to 12.9 Mt from 2016 mainly due to increased production by Zimbabwe, Sweden and India.

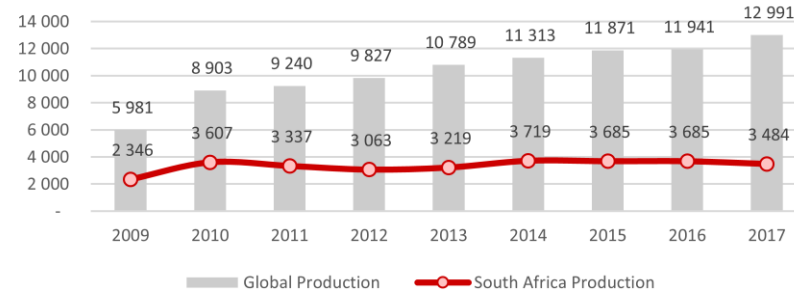
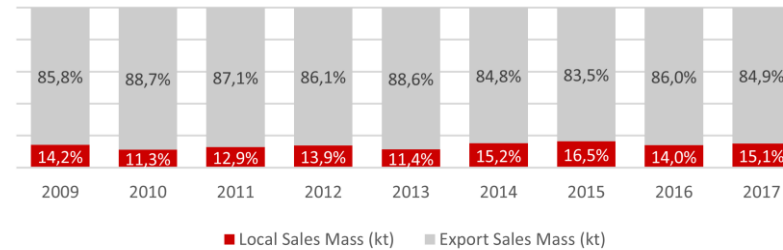
2ndLARGEST
producer3 484
kt (2017)26.8%
of total global
production1stLARGEST
exporter2 951
kt (2017)45.0%
of total global
exports

KEY NOTES

- ✓ Consumption of ferro-chrome rose to 12.1 Mt in 2017 mainly because of increased stainless steel production in China.
- ✓ Between 2016 and 2017 the price of ferro-chrome increased by 43.7%.
- ✓ the price increase correlates with global chrome ore price increases.

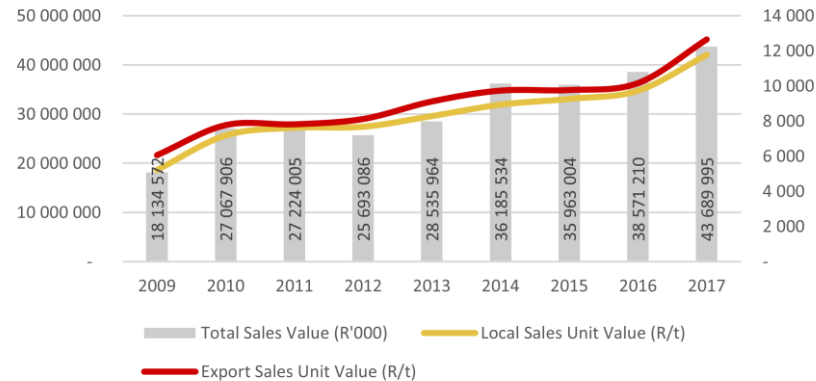
SOUTH AFRICA PROPORTIONAL CONTRIBUTION TO TOTAL
GLOBAL FERROCHROME EXPORTS (%)

TOTAL GLOBAL AND SOUTH AFRICA FERROCHROME PRODUCTION (kt)

Average
Ferrochrome
Production per
Year3 349
ktPROPORTIONAL DISTRIBUTION BETWEEN LOCAL AND EXPORT
SALES (kt)Average
Local Sales
per Year

16.1%

TOTAL SALES VALUE OF FERROCHROME IN SOUTH AFRICA (R'000)

Local Sales
Unit Value
(R/t) - 2017

R11 770

Export Sales
Unit Value
(R/t) - 2017

R12 649

4.4.2 FERRO-SILICON MARKET OVERVIEW

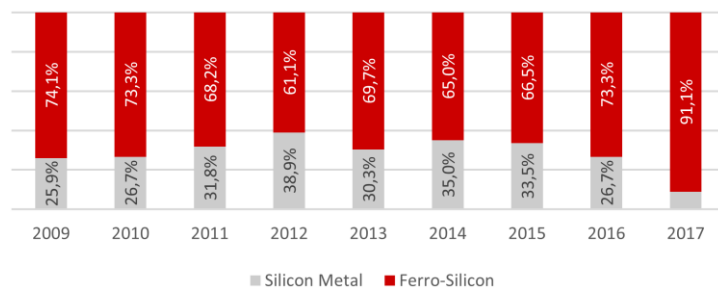
FERRO-SILICON
INDUSTRY OVERVIEWGLOBAL
IMPORTANCE

In 2017 global ferro-silicon production was dominated by China accounting for 66% of production. Global production has slowed due to decreased output by China.

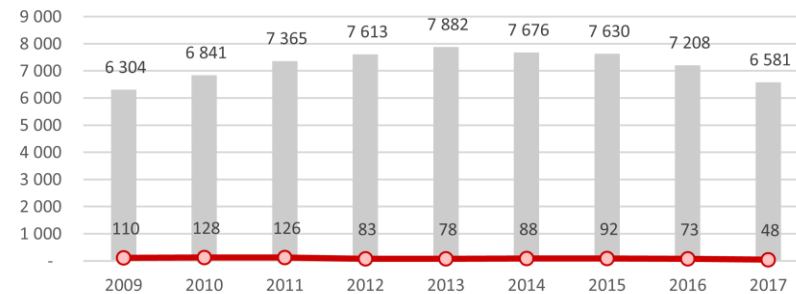
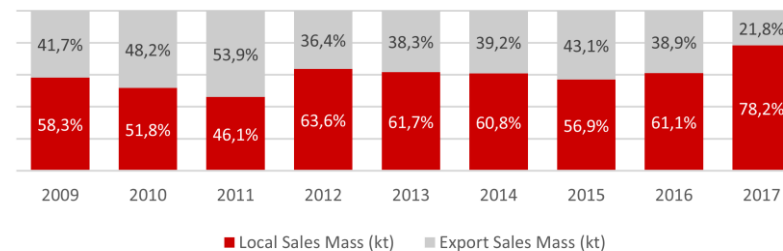
8thLARGEST
producer48.2
kt (2017)0.6%
of total global
production6thLARGEST
exporter8.6
kt (2017)3.5%
of total global
exports

KEY NOTES

- ✓ Consumption of ferro-silicon has decreased since 2016 although world steel output grew by 20%.
- ✓ Decreased consumption is the result of lower utilisation of crude steel in China and slow growth in world output of iron castings.

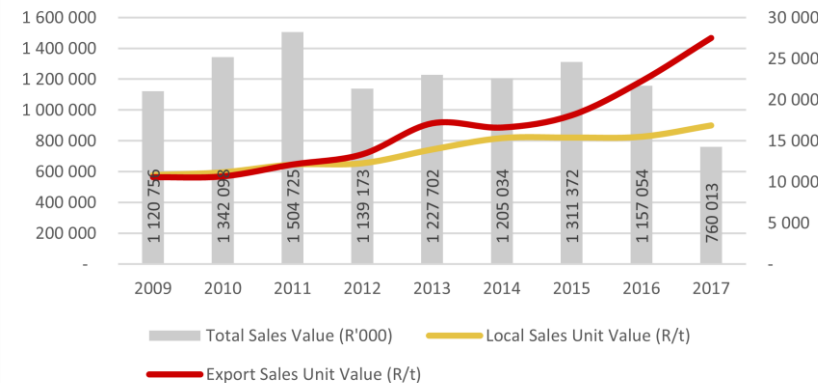
PROPORTIONAL CONTRIBUTION BY FERRO-SILICON AND
SILICON METAL TO SOUTH AFRICAN OUTPUT (%)

TOTAL GLOBAL AND SOUTH AFRICA FERRO-SILICON PRODUCTION (kt)

Average
Ferro-silicon
Production per
Year91.9
ktPROPORTIONAL DISTRIBUTION BETWEEN LOCAL AND EXPORT
SALES (kt)Average
Local Sales
per Year

59.8%

TOTAL SALES VALUE OF FERRO-SILICON IN SOUTH AFRICA (R'000)

Local Sales
Unit Value
(R/t) - 2017

R13 713

Export Sales
Unit Value
(R/t) - 2017

R16 482

4.4.3 FERRO-MANGANESE MARKET OVERVIEW

FERRO-MANGANESE
INDUSTRY OVERVIEWGLOBAL
IMPORTANCE

In 2017 global high-carbon ferro-manganese production rose by 16% to 4.2 Mt from 2016 mainly from production in China and Malaysia.

7thLARGEST
producer

458

kt (2017)

11.0%

of total global
production3rdLARGEST
exporter

271

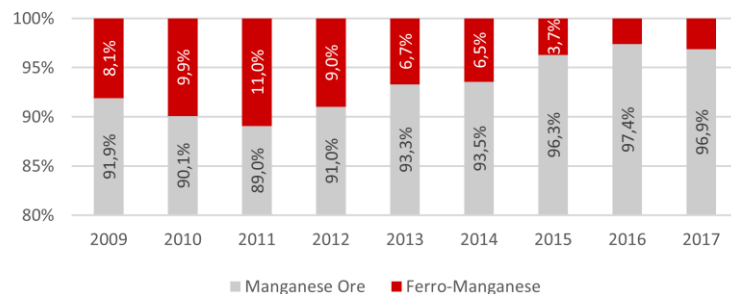
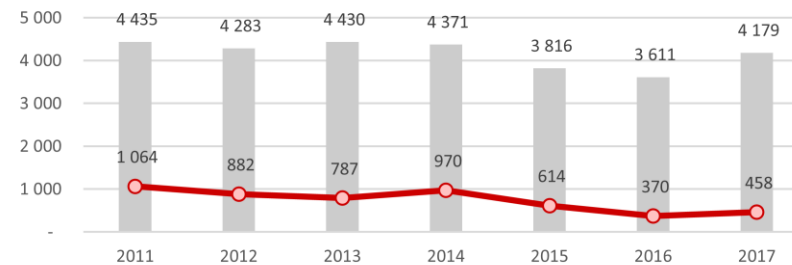
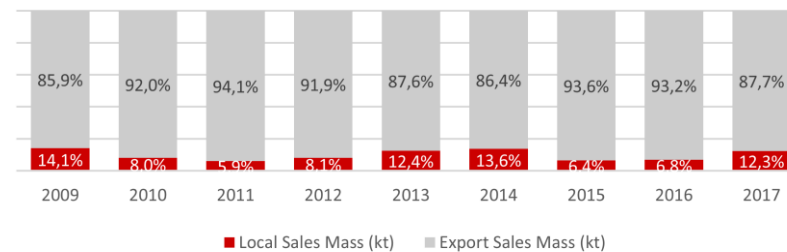
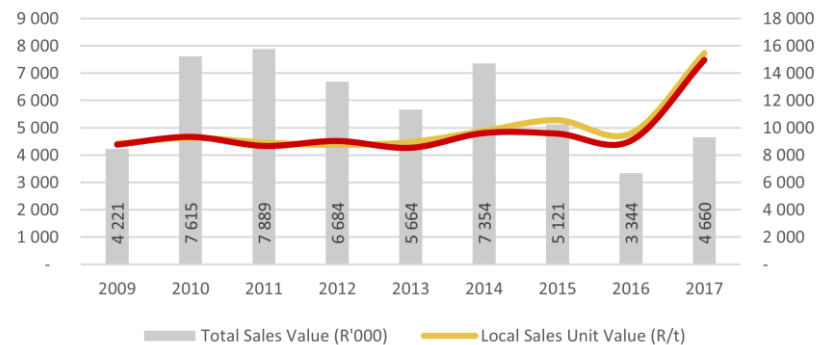
kt (2017)

14.2%

of total global
exports

KEY NOTES

- ✓ In 2017 production slightly outstripped global demand although global demand has steadily been decreasing since 2013.
- ✓ The United States, Netherlands and Germany are the highest importers of high-carbon ferro-manganese.

PROPORTIONAL CONTRIBUTION BY MANGANESE ORE AND
FERRO-MANGANESE TO SOUTH AFRICAN OUTPUT (%)TOTAL GLOBAL AND SOUTH AFRICA FERRO-MANGANESE
PRODUCTIONPROPORTIONAL DISTRIBUTION BETWEEN LOCAL AND EXPORT
SALES (kt)TOTAL SALES VALUE OF FERRO-MANGANESE IN SOUTH AFRICA
(R'000)

Average

Ferro-
manganese
Production per
Year

704
kt

Average

Local Sales
Production per
Year

9.8%

Local Sales
Unit Value
(R/t) - 2017

R10 015

Export Sales
Unit Value
(R/t) - 2017

R9 730

4.4.4 STEEL MARKET OVERVIEW

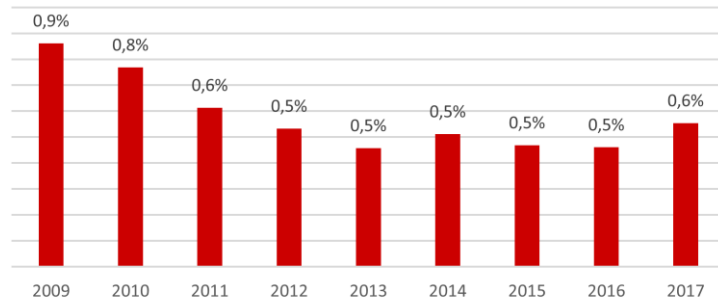
STEEL PRODUCTION
INDUSTRY OVERVIEWGLOBAL
IMPORTANCE

In 2019 steel demand is estimated to reach 1 735 Mt (1.3% increase from 2018). Steel demand is expected to grow but in tandem with slowing global economic growth.

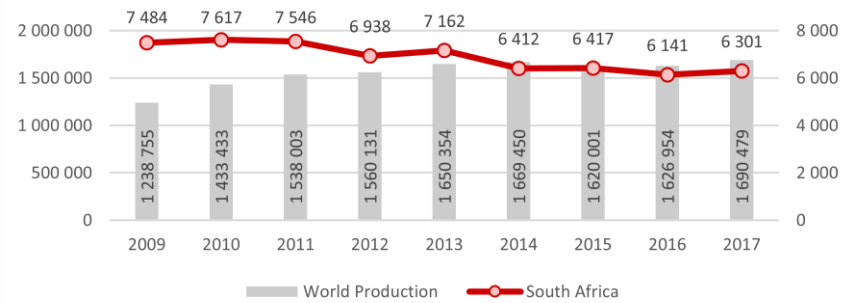
25thLARGEST
producer3 484
kt (2017)0.4%
of total global
production31stLARGEST
exporter2 562
kt (2017)0.6%
of total global
exports

KEY NOTES

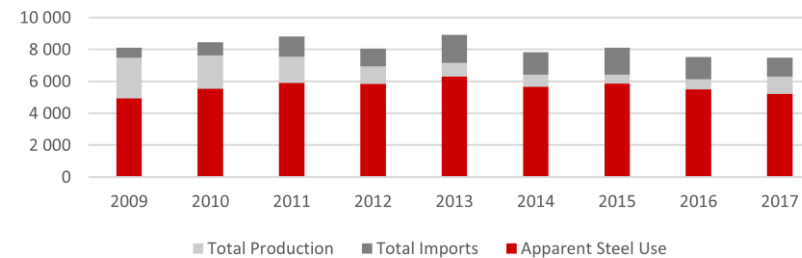
- ✓ Demand for steel is forecast to remain positive in light of China's economic deceleration, slowing global economic growth and trade policy uncertainty.
- ✓ A slow-down in developed economies is expected to lead to decreased steel demand.
- ✓ Steel demand in developing economies is expected to remain robust.

SOUTH AFRICA PROPORTIONAL CONTRIBUTION TO TOTAL
GLOBAL CRUDE STEEL EXPORTS (%)

TOTAL GLOBAL AND SOUTH AFRICA CRUDE STEEL PRODUCTION (kt)

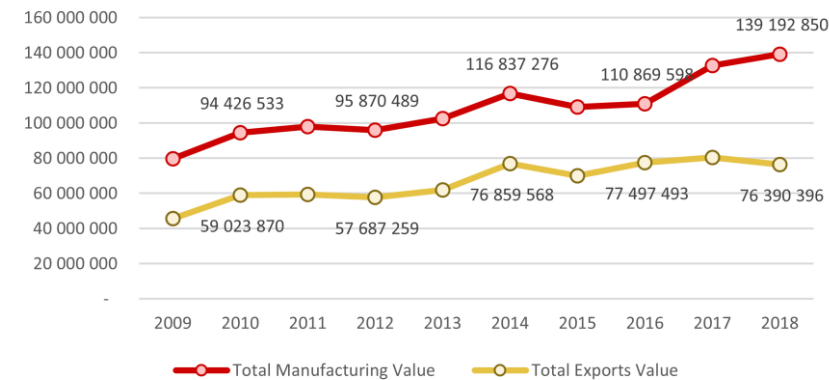
Average
Crude Steel
Production per
Year6 891
kt

APPARENT STEEL USE PER YEAR (kt)

Average
Apparent
Steel Use per
Year

5 635

TOTAL SALES VALUE OF CRUDE STEEL IN SOUTH AFRICA (R'000)

Total Sales
Value (R) -
2018R139.2
billionTotal Export
Value (R) -
2018R76.4
billion

4.5 SPECIAL ECONOMIC ZONES IN SOUTH AFRICA

Because of the nature of the Musina-Makhado Special Economic Zone it is essential to review the current operational environment of special economic zones in South Africa.

The purpose of the section is to:

- ✓ consider the current intended outcome of SEZ's in South Africa,
- ✓ identify the current operational SEZ's in the country,
- ✓ determine the core focus of operational SEZ's in South Africa in order to determine potential competitive advantages,
- ✓ consider the impact generated by SEZ's in South Africa and the potential benefits and pitfalls.

The following sub-sections focus on providing an overview in regard to the above-mentioned purpose of the section.

4.5.1 INTENDED OUTCOME OF SPECIAL ECONOMIC ZONES IN SOUTH AFRICA

Special economic zones or SEZ's are specific geographic localities designated under the SEZ Act 16 of 2014 that concentrate and direct targeted economic activities and promotes foreign direct investment in order to bolster economic growth, industrialisation and industry growth, infrastructure investment, increased global competitiveness through exports and development and socio-economic benefits to local communities.

The Industrial Policy Action Plan (2018) identifies SEZ's as one of the major role-players in accelerating economic growth in South Africa and driving industrialisation of the economy.

The purpose of SEZ's are to²:

- ✓ facilitating the creation of an industrial complex, having strategic national economic advantage for targeted investments and industries in the manufacturing sector and tradable services;
- ✓ developing infrastructure required to support the development of targeted industrial activities;
- ✓ attracting foreign and domestic direct investment;
- ✓ providing the location for the establishment of targeted investments;
- ✓ enabling the beneficiation of mineral and natural resources;
- ✓ taking advantage of existing industrial and technological capacity, promoting integration with local industry and increasing value-added production;
- ✓ promoting regional development;
- ✓ creating decent work and other economic and social benefits in the region in which it is located, including the broadening of economic participation by promoting small, micro and medium enterprises and co-operatives, and promoting skills and technology transfer; and
- ✓ the generation of new and innovative economic activities.

The purpose of SEZ's provide a clear and concise directive for stimulating economic growth across numerous platforms and systems. The outcome of SEZ's could:

- ✓ accelerate local development through the encouragement of investment opportunities in local communities;
- ✓ increase the stock of direct foreign investments in the country because of favourable investment spaces;
- ✓ accelerate economic development and growth in the broader economic geography;
- ✓ increase the volume of value-added exports;
- ✓ create employment opportunities and allow for socio-economic upliftment; and
- ✓ assists with the diversification of regional economies through the implementation of a multitude of industries.

² Special Economic Zones Act 16 of 2014

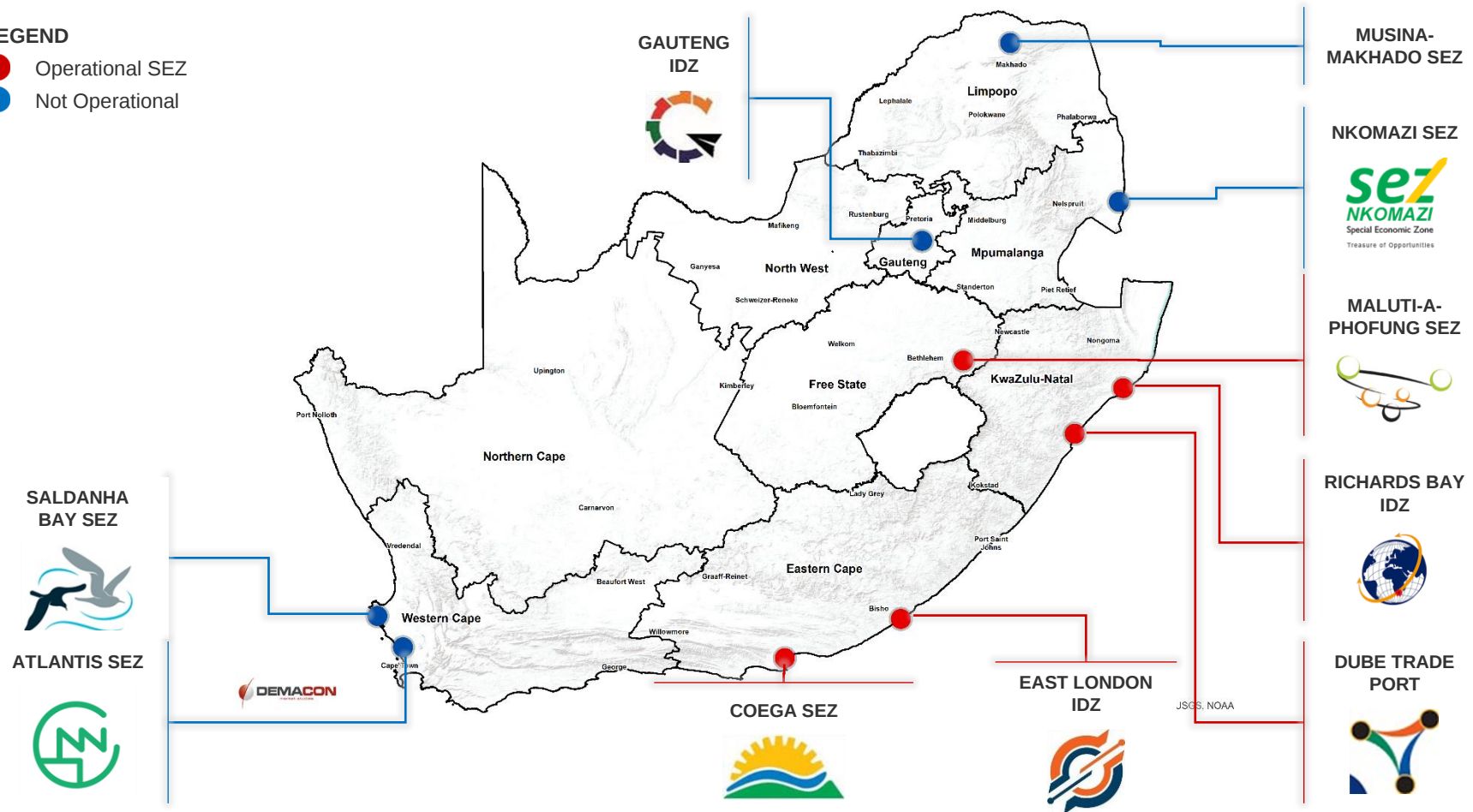
4.5.2 CURRENT AND PROPOSED SPECIAL ECONOMIC ZONES IN SOUTH AFRICA

The following maps provide a concise overview the distribution of operational and proposed SEZ's in South Africa and the intended focus areas of each SEZ.

Map 4.8: Special Economic Zones in South Africa

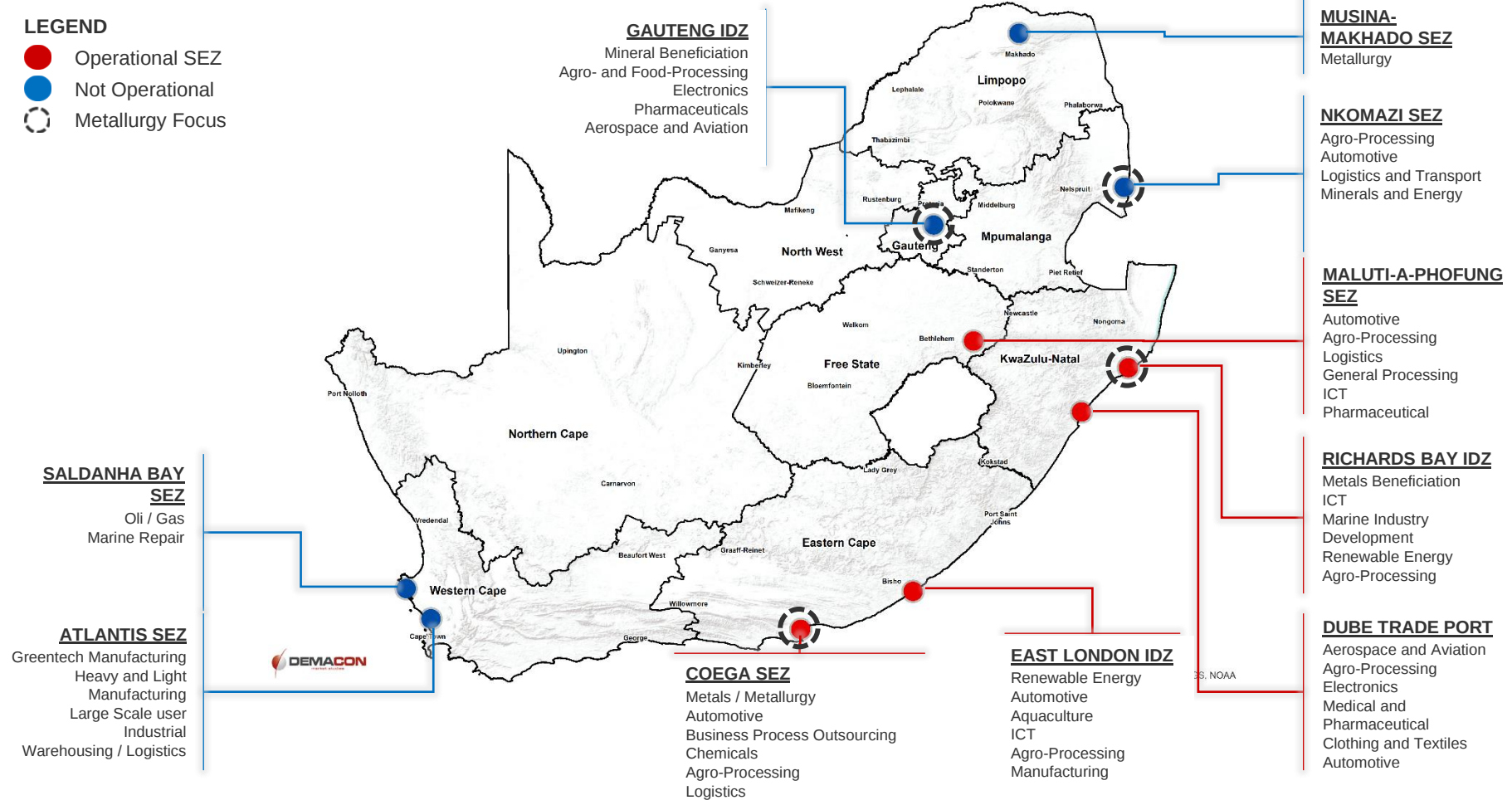
LEGEND

- Operational SEZ
- Not Operational



Source: DEMACON ex DTI, 2019

Map 4.9: Special Economic Zones Focus Areas in South Africa



Source: DEMACON ex DTI, 2019

4.5.3 DESCRIPTION OF SPECIAL ECONOMIC ZONES IN SOUTH AFRICA

The following provides a brief description of each SEZ in South Africa in order to determine functions and offerings presented by SEZ's and to outline the potential competitive advantage that the Musina-Makhado SEZ may have in comparison to other SEZ's.

The section outlines a brief description of each SEZ in South Africa and provides a concise outline of the sector focus for SEZ's. The information provides a basis to determine the extent to which operations proposed in the Musina-Makhado SEZ are beneficial to not only the local economy but the regional and national economy as well.



COEGA SEZ

SECTOR FOCUS

	Metals / Metallurgy		Automotive
	Business Process Outsourcing		Chemicals
	Agro-processing		Logistics

DESCRIPTION

The Coega IDZ leverages public-sector investment to attract foreign and domestic direct investment in the manufacturing sector with an export orientation. The IDZ has attracted investment in the agro-processing, automotive, aquaculture, energy, metals logistics and business process services sectors. This has advanced socioeconomic development in the Eastern Cape through skills development, technology transfer and job creation.



RICHARDS BAY IDZ

SECTOR FOCUS

	Metals Beneficiation		ICT
	Marine Industry Development		Renewable Energy
	Agro-processing		

DESCRIPTION

The Richards Bay IDZ is a purpose-built and secure industrial estate on the north-eastern South African coast. The N2 business corridor links the province's two major ports, Durban and Richards Bay, and connects with Maputo in Mozambique and, ultimately, areas of East Africa. It is linked to an international seaport of Richards Bay, tailored for the manufacturing and storage of minerals and products to boost beneficiation, investment, economic growth and, most importantly, the development of skills and employment.



EAST LONDON IDZ

SECTOR FOCUS

	Renewable Energy		Automotive
	Aquaculture		ICT
	Agro-processing		Manufacturing

DESCRIPTION

the zone has become a prime industrial park, renowned for its customised solutions for various industries, including automotive, agro-processing and aquaculture. The ELIDZ offers growth-oriented companies a specialised manufacturing platform, innovative industrial and business solutions, and access to new markets and strategic industry networks.



DUBE TRADE PORT

SECTOR FOCUS

	Aerospace and Aviation		Agro-processing
	Electronics		Medical and Pharmaceutical
	Clothing and Textiles		Automotive

DESCRIPTION

Areas that have been designated as the IDZ are the Dube Trade Zone and the Dube AgriZone. The Dube Trade Zone focuses on manufacturing and value-addition primarily for automotive, electronics and fashion garments. The facility involves warehousing, manufacturing, assembling real estate resource, complete with a single facility in which all freight-forwarders and shippers are located (Dube TradeHouse). The Dube AgriZone is a high-tech, future-farming facility



MALUTI-A-PHOFUNG SEZ

SECTOR FOCUS

	Automotive		Agro-Processing
	Logistics		General Processing
	ICT		Pharmaceutical

DESCRIPTION

This newly established SEZ offers exporters a logistics base that facilitates access to the Port of Durban, and intermodal logistics solutions for the transfer of freight between road and rail. The zone is well-suited and licensed for general manufacturing, offering a convenient production base for light and medium manufacturing.



NKOMAZI SEZ

SECTOR FOCUS

	Agro-Processing		Automotive
	Logistics and Transport		Minerals and Energy

DESCRIPTION

The Nkomazi SEZ is conceptualised as an agro-processing hub, which will be supported by mixed services such as warehousing and logistics. The processing of agricultural products in the Nkomazi SEZ will be based on automated and semi-automated as well as high-tech manufacturing technologies, which will be largely based on green or renewable energy uses. The supporting services will include logistics (intermodal logistic; production logistics) and warehousing facilities, which will also promote the utilisation of green sources of energy.



GAUTENG IDZ

SECTOR FOCUS

	Mineral Beneficiation		Agro- and Food-Processing
	Electronics		Pharmaceuticals
	Aerospace and aviation		

DESCRIPTION

aims to develop land around OR Tambo International Airport to stimulate economic development through the use of the IDZ mechanism. The OR Tambo IDZ supports the growth of the beneficiation of precious metals and minerals sector, with a focus on light, high-margin, export-oriented manufacturing of South African precious and semi-precious metals.



SALDANHA BAY SEZ

SECTOR FOCUS



Oil and Gas



Marine Repair

DESCRIPTION

The proposed Atlantis SEZ is part of the City of Cape Town's initiative taken in 2011 to establish a Greentech manufacturing hub in Atlantis. This was in response to the Department of Energy's Renewable Energy Independent Power Producer Programme (REIPPP). Localisation of manufacturing and the resultant job creation is one of the key priorities of Government through the REIPP programme.



ATLANTIS SEZ

SECTOR FOCUS



Greentech Manufacturing



Heavy and Light Manufacturing



Large Scale User Industrial



Warehousing and Logistics

DESCRIPTION

It is envisioned that this IDZ will serve as the primary oil, gas and marine repair engineering and logistics services complex in Africa, servicing the needs of the upstream oil exploration industry and production service companies operating in the oil and gas fields off Sub-Saharan Africa. Situated approximately two hours north of Cape Town, the SBIDZ will include logistics, repairs and maintenance, and fabrication activities.

From the map above it can be observed that SEZ's in South Africa are primarily located at major coastal ports, border posts or inland port / transportation nodes. Although many SEZ's in the country are not currently fully operational, work is undertaken in the establishment of core functions and management structures, as well as the attraction of initial investments to encourage activity.

Of the nine SEZ's in South Africa, six SEZ's are positioned as part of a coastal port or located in close proximity to a port. The six SEZ's include the Richards Bay IDZ, the Dube Trade Port, the East London IDZ, the Coega SEZ, Saldanha Bay SEZ and Atlantis SEZ.

The Gauteng IDZ and Maluti-A-Phofung SEZ are positioned as inland port localities which function as part of major logistical localities by means of road, rail and air transportation. The Musina-Makhado SEZ and Nkomazi SEZ are positioned in proximity of major border posts to Mozambique and Zimbabwe.

SEZ's in South Africa focus investment opportunities on a wide variety of industries but also correlate in regard to similar intended production outcomes. Primarily, SEZ's focus investment opportunities in sectors such as: agro-processing; mineral beneficiation and metallurgy; general manufacturing; ICT and electronics; medical and pharmaceuticals; and logistics and transportation.

When considering the intended operations of the MEMSEZ, the mineral beneficiation and metallurgy activities incorporated as part of other SEZ's primarily focus on ferrous and non-ferrous metal and precious and semi-precious metal production.

The production of metallurgical products form part of the Coega SEZ (Ferrous and Non-Ferrous Metals), Richards Bay IDZ (Aluminium), Nkomazi SEZ (Ferrous and Non-Ferrous Metals) and the Gauteng IDZ (Precious and Semi-Precious Metals) special economic zones.

4.5.4 LIMPOPO ECO-INDUSTRIAL PARK

The Limpopo Eco-Industrial Park (LEIP) is a locally driven project to establish the world's first zero solid waste eco-industrial park. The LEIP is to be established on previously utilised mining land known as Antonville. The site situated north-east of Musina and seeks to form part of the greater Musina SEZ.

The LEIP primarily focuses on industrial activities associated with:

- ✓ metallurgical coke and power co-generation plant to produce coke and electricity,
- ✓ gas-to-liquid plant to produce sulphur free diesel, naphtha and liquid petroleum gas,
- ✓ plasma waste gasification plant to produce synthetic gas and slag (used for road tarring), and
- ✓ brick making plant to produce bricks from slag produced by the plasma waste plant.

Additionally, the LEIP will include other non-industrial developments such as:

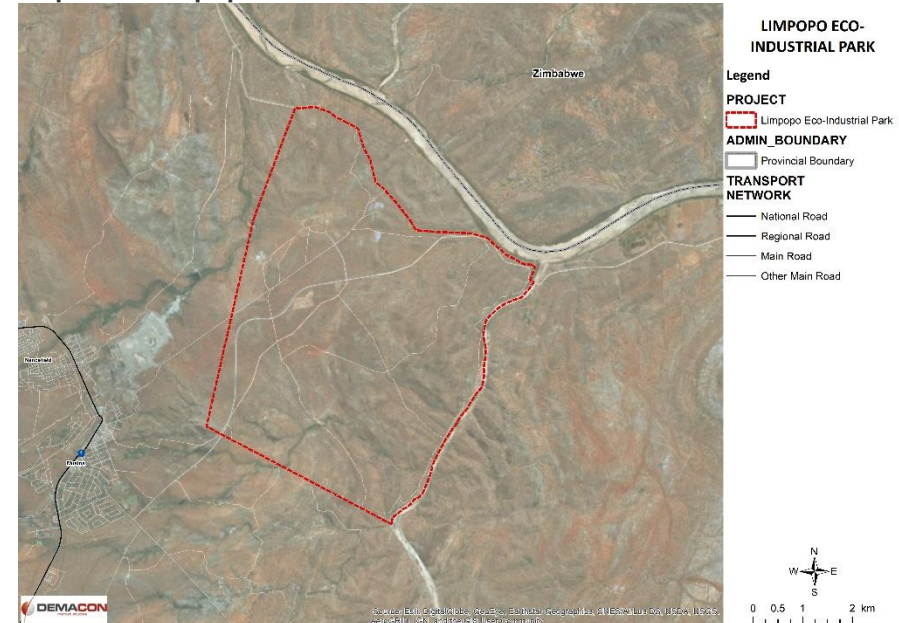
- ✓ Business incubation centre for SMME's,
- ✓ Industrial ecology facility which acts as a research and development facility for students, researchers and engineers,
- ✓ Nature preservation area which is a nature area to be run as an eco-tourism SMME and will provide recreational activities to staff, and
- ✓ Two residential eco-estates that will provide housing to workers.

The LEIP also seeks to provide effective and efficient services provision through water treatment works, solid waste disposal and electricity provision.

According to Eco-Industrial Solutions, the developer of the LEIP, the LEIP has applied for formal approval, in principle, to be designated a SEZ under the Special Economic Zone Act 16 of 2014. The designation of the LEIP as an SEZ will allow for the establishment of the Musina Special Economic Zone. In principle the LEIP has received approval and has been identified

as an anchor project for the SEZ. The LEIP is currently undertaking steps to obtain approval to be registered as an operator within the Musina SEZ.

Map 4.10: Limpopo Eco-Industrial Park



Source: DEMACON GIS, 2019



LIMPOPO ECO-INDUSTRIAL PARK

SECTOR FOCUS



Metallurgical Coke



Power Generation



Gas-to-Liquid



Plasma Waste Gasification



Brick Making

4.6 SYNTHESIS

The following provides a concise overview of Chapter 3 in order to outline the key salient factors, influences and trends impacting on the manufacturing, metallurgical and special economic zones in the host municipalities and broader national and global economic landscape.



MANUFACTURING SECTOR CONTEXT

- ✓ The manufacturing sector nationally proportionally contributes 13.2% to national GDP and 9.3% to national employment.
- ✓ The majority of manufacturing sector GDP is produced in the Gauteng Province, whilst the Limpopo proportionally contributes the third lowest GDP (7.3%) of all provinces.
- ✓ Historical trends show that the manufacturing sector average annual growth has steadily been decreasing since 2008 and the proportional contribution that the sector makes to national GDP has been decreasing for the same time-period.
- ✓ In a similar fashion job creation in the sector has also steadily been decreasing since 2008 and in effect the proportional contribution by the sector has contracted.
- ✓ Exports of manufactured goods are outstripped by imports of manufactured goods.
- ✓ The manufacturing sector in the Limpopo Province contributes 7.3% to national GDP and within the province proportionally contributes 3.3% to the provincial economy. At a district and local geographic level, the contribution by the manufacturing sector is marginal (between 2% and 3% of total economic output).

- ✓ The compensation of employees in the manufacturing sector of the Limpopo Province, Vhembe District and Musina and Makhado Host Municipalities are below the national average.
- ✓ Nationally, employee compensation in the manufacturing sector is on average R20 151 per month and growth at an average annual rate of 2.5%.



METALLURGICAL CONTEXT AND ACTIVITY ANALYSIS

- ✓ Based on the proposed operations of the Musina-Makhado SEZ, the output of the SEZ will form part of the manufacturing sector of the economy. More specifically, the focus of activities are focused on the metallurgical industry which manufactures (beneficiates) raw minerals into steel related products.
- ✓ The manufacturing sector is the 4th largest economic sector of South Africa and contributes 13.2% to the national GDP. The sector also proportionally contributes 9.3% to the total employment of the country. The Limpopo province proportionally contributes 7.3% to the total manufacturing output of the country.
- ✓ The metallurgical component of the SEZ focuses on ferroalloys of chrome, silicon and manganese and the production of steel and stainless steel.
- ✓ Ferroalloys in South Africa contribute to global production:
 - Ferro-chrome – 2nd largest producer
 - Ferro-silicon – 8th largest producer
 - Ferro-manganese – 7th largest producer
 - Crude steel – 25th largest producer
- ✓ Steel and ferroalloy exports have been dampened by decreased global demand as a result of slowing economic growth and construction in China.
- ✓ The production of steel and ferroalloys have also declined due to falling global demand. Historically, ferroalloy production has

maintained stable production output, whilst steel production has continuously been decreased over time.

- ✓ The sales price of ferroalloys and steel have maintained steady growth annually even though global demand has tapered off in recent years.



SPECIAL ECONOMIC ZONES IN SOUTH AFRICA

- ✓ Currently, 10 SEZ's are designated in South Africa and 5 SEZ's are operational. The majority of SEZ's are distributed along the coast of the country in and around major sea and logistics ports.
- ✓ Investment opportunities in designated SEZ's in the country primarily focus on agro-processing, mineral beneficiation and metallurgy, general manufacturing, ICT and electronics, medical and pharmaceuticals and logistics and transportation.
- ✓ Metals beneficiation and metallurgy are primarily focused on ferrous and non-ferrous metals and precious and semi-precious metals.

ECONOMIC PROFILE



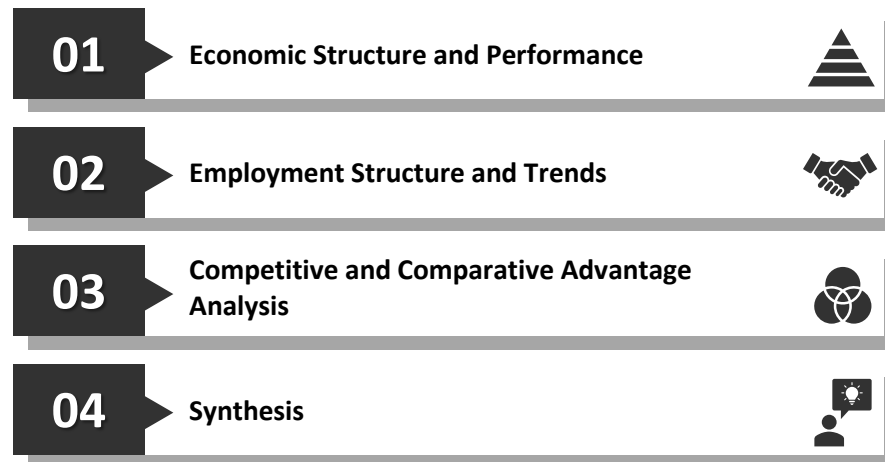
5 ECONOMIC PROFILE

5.1 INTRODUCTION

The aim of Chapter 3 is to outline and analyse the size of the local and regional economy and, identify the key driving forces behind economic growth and development. The chapter is focused on providing an analysis of historical trends (not the forecasting of future opportunities) and the potential impacts that could arise as a result of past trends.

The data used as part of the chapter is current up to 2018 and thus analysis of economic data is restricted to 2018.

The following sections provide a concise overview of the local economy in terms of:



The purpose of the economic structure and performance section is to profile the structure and performance of the host and supporting municipalities with regard to the size of provincial, district and local municipalities, the sectoral composition of the host municipalities, and historical growth trends of the host and supporting municipalities.

Comparatively, the employment structure and trends section undertakes analysis on the same basis and principle as the preceding section. The purpose is to understand the growth and distribution of employment in the host and supporting municipalities.

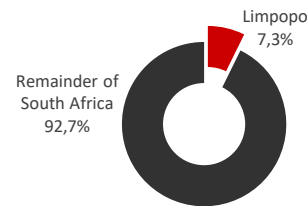
The competitive and comparative analysis section seeks to undertake an assessment of the structure and performance of the host municipalities geographic region in order to identify local strengths and potential for economic development.

Lastly the Chapter synthesises outcomes observed from preceding sections in order to provide a concise overview of the key and salient features to be taken into consideration.

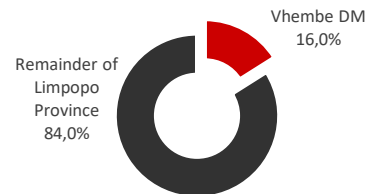
5.2 ECONOMIC STRUCTURE AND PERFORMANCE

SIZE AND CONTRIBUTION BY PROVINCIAL, DISTRICT AND LOCAL MUNICIPALITIES TO ITS CONTAINING ECONOMIC GEOGRAPHY

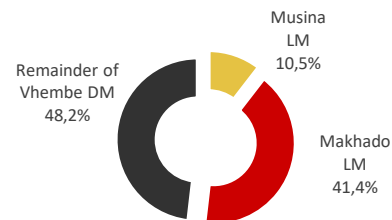
Size of the Provincial Economy



Size of the District Economy



Size of the Local Economy



SIZE OF THE LOCAL ECONOMY AND CONTRIBUTION BY MINING AND MANUFACTURING SECTORS

Musina Total GVA
R4 313 (R/million)

Mining Contribution **20.6%**

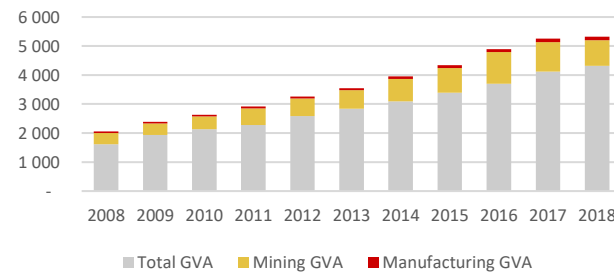
Manufacturing Contribution **2.7%**

Makhado Total GVA
R20 056 (R/million)

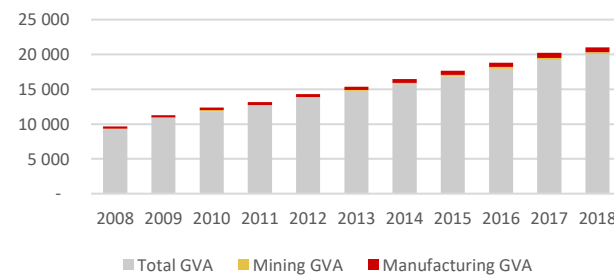
Mining Contribution **1.3%**

Manufacturing Contribution **3.5%**

MUSINA LOCAL MUNICIPALITY

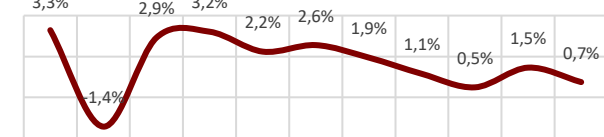


MAKHADO LOCAL MUNICIPALITY

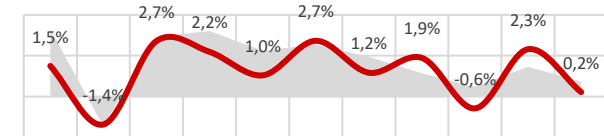


ECONOMIC GROWTH

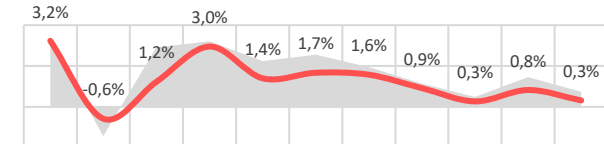
South Africa



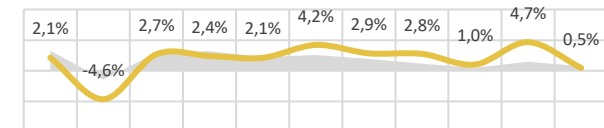
Limpopo



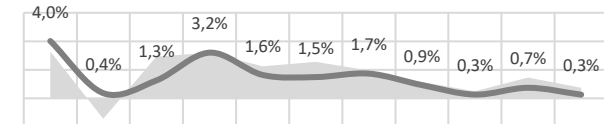
Vhembe District



Musina LM

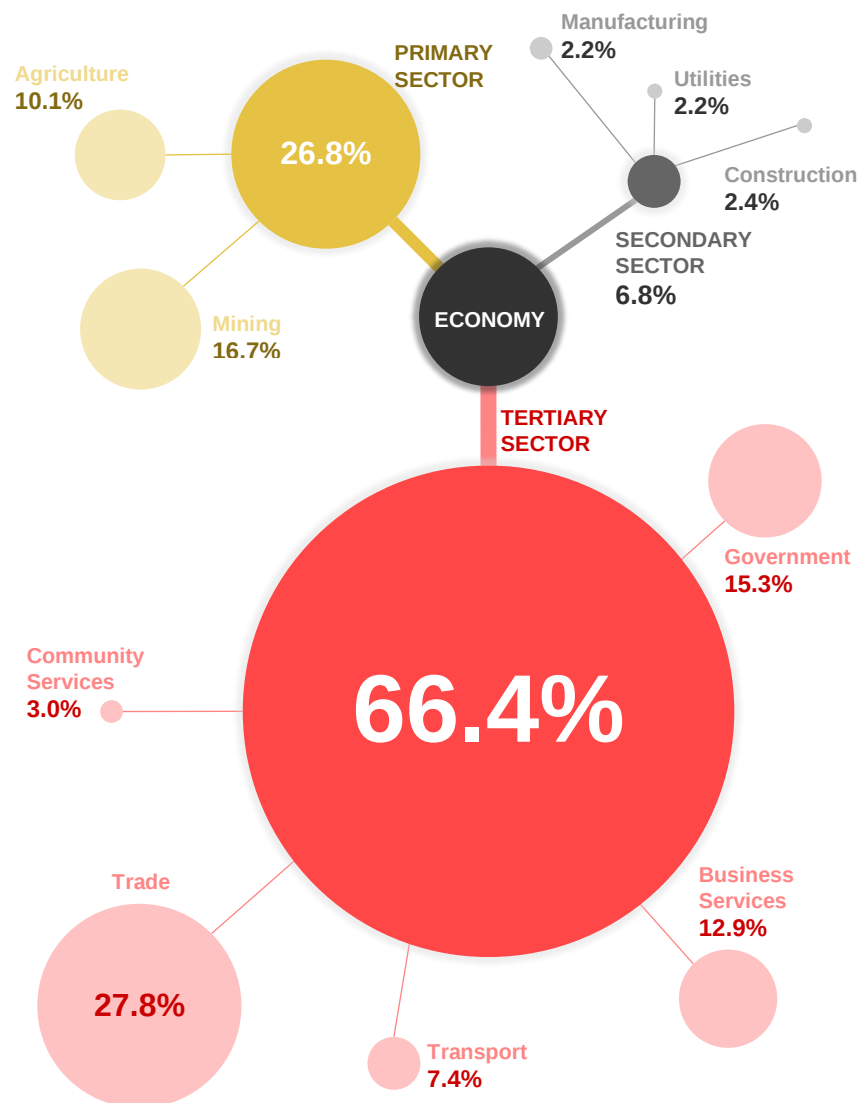


Makhado LM

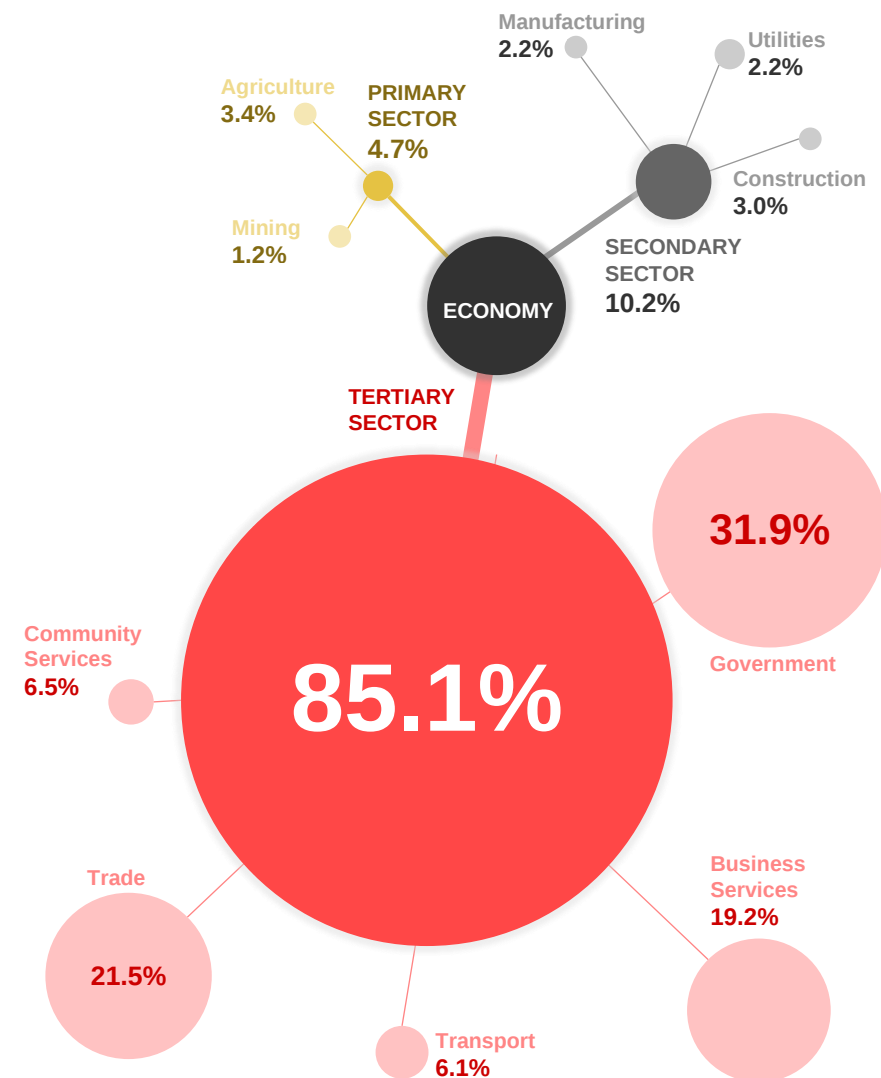


■ South Africa

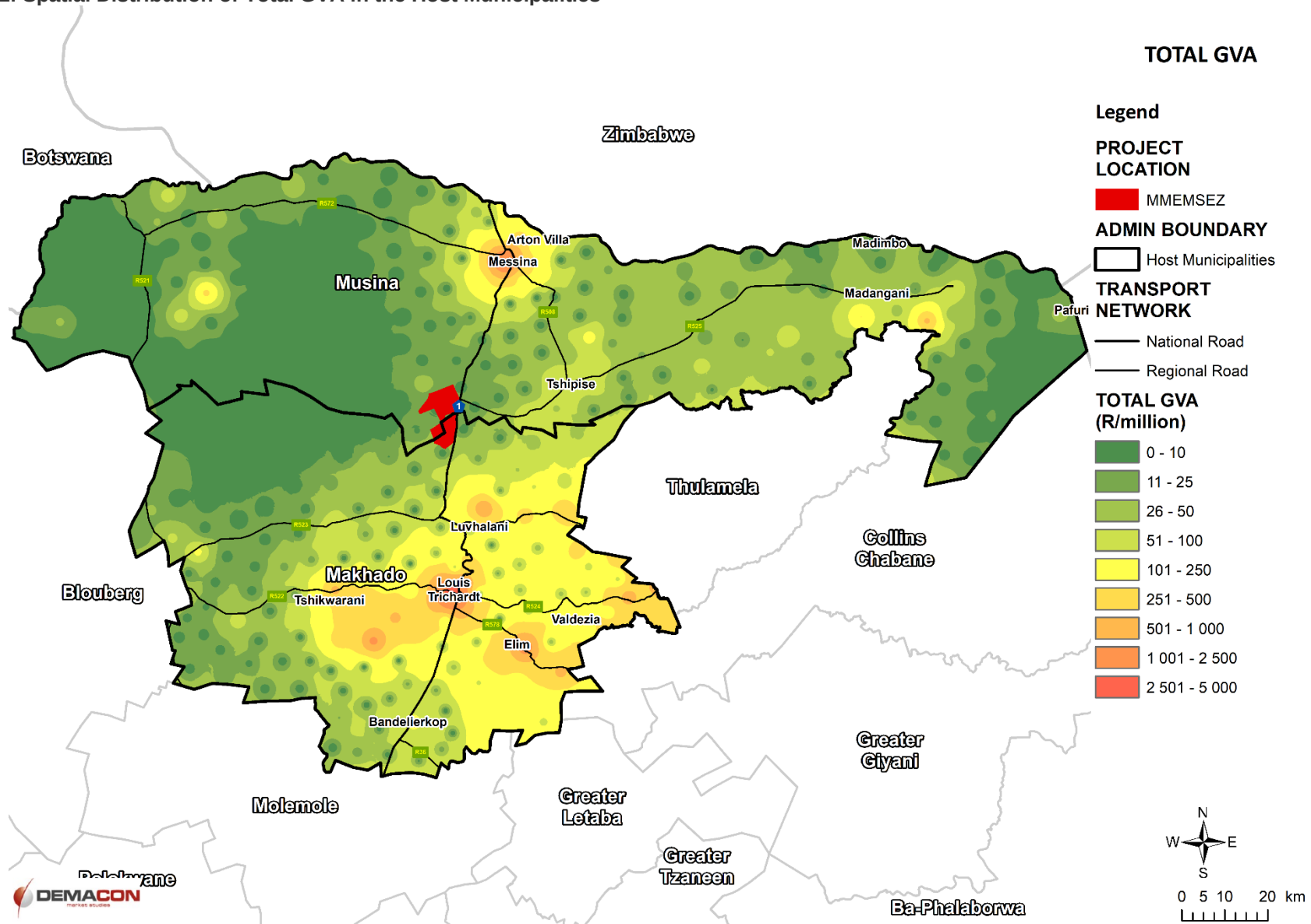
ECONOMIC SECTOR CONTRIBUTION TO TOTAL GVA OF THE MUSINA LOCAL MUNICIPALITY



ECONOMIC SECTOR CONTRIBUTION TO TOTAL GVA OF THE MAKHADO LOCAL MUNICIPALITY



Map 5.1: Spatial Distribution of Total GVA in the Host Municipalities



5.2.1 DISCUSSION

ECONOMIC ACTIVITY AND SIZE

Economic activity and size refer to the overall size of a defined economic area and its contribution to larger economic geographies. The following seeks to outline the size of local, district and provincial economies by considering the Gross Value Added (GVA) contribution made by each of the afore mentioned economies to the large economic geography in which it resides.

Gross Value Added (GVA) – The level of economic activities within a specific area. GVA is calculated as the difference between output and intermediate consumption in the economy. This is the difference between the value of goods and services produced and the cost of raw materials and other inputs, which are used in production by all sectors of an economy.

The data shows that the Musina and Makhado local municipalities contribute 10.5% and 41.4% to the total GVA of the Vhembe DM. The Vhembe district municipality contributes 16.0% to the total GVA of the Limpopo Province, whilst the Limpopo Province contributes slightly more than 7% to the National GVA.

Additionally, the total size of the Musina and Makhado local municipality economies have continually increased between 2008 and 2018. The mining and manufacturing sectors play marginal roles in the context of the host municipality economies. The mining sector in the Musina local economy does however contribute one fifth to the municipal GVA thus positioning the sector as a prominent role-player in the context of the Musina Local Municipality.

SECTORAL ANALYSIS – ECONOMIC OUTPUT (GVA)

In order to further understand the host municipality economies within which the proposed SEZ is to function, analysis of the composition of the afore mentioned municipality economies can be conducted. The composition of the host municipality economies can be achieved by considering the

contribution by each host municipality economic sector to total GVA of said economy and the shifts and changes that has occurred due to output changes by each sector.

The data shows that in the Musina local economy, the sectors that proportionally contribute the most to total GVA of the municipality are the wholesale and retail trade, mining and quarrying, and general government sectors.

Alternatively, in the Makhado local economy, the general government, wholesale and retail trade and financial and business services sectors proportionally contribute the most to the total GVA output of the local economy.

Most notably, within the Musina and Makhado local economies the wholesale and retail trade and general government sectors have shown an increase in the proportional share of the sectors to total output. The information shows that a potential focus on the government services and retail activities are becoming apparent as a appose to a focus on industry-based sectors.

ECONOMIC GROWTH

The rate at which an economic area grows is an indication of the economic areas potential to expand, and historical trends can provide valuable information with reference to future potential as well as sensitivity to fluctuations in the larger economic sphere.

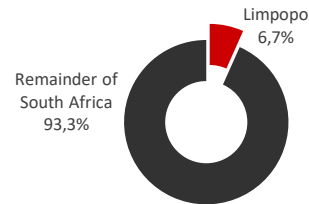
The data shows that the average annual growth rate for the Musina local economy has maintained a growth rate consistently higher than national, provincial and district averages over the short and medium term.

Within the Makhado local economy average annual economic growth has steadily been decelerating since 2011 and maintains average annual growth below national, provincial and district growth rates.

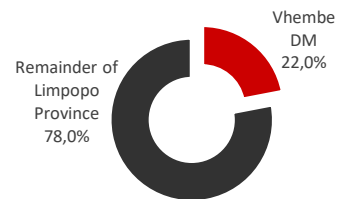
5.3 EMPLOYMENT STRUCTURE AND TRENDS

SIZE AND CONTRIBUTION BY PROVINCIAL, DISTRICT AND LOCAL MUNICIPALITIES TO ITS CONTAINING ECONOMIC GEOGRAPHY

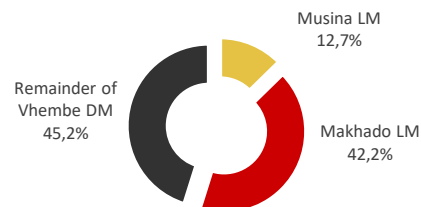
Size of the Provincial Economy



Size of the District Economy



Size of the Local Economy



SIZE OF THE LOCAL ECONOMY EMPLOYMENT AND CONTRIBUTION BY FORMAL AND INFORMAL SECTORS

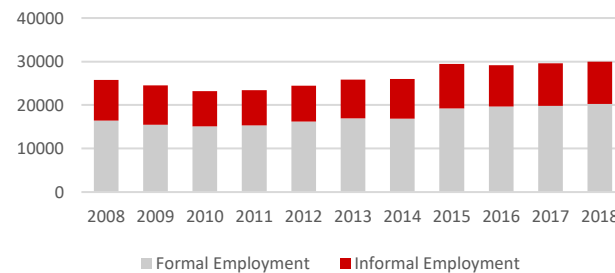
Musina Total Employment
29 945 jobs

Formal Jobs Contribution **67.7%**
Informal Jobs Contribution **32.3%**

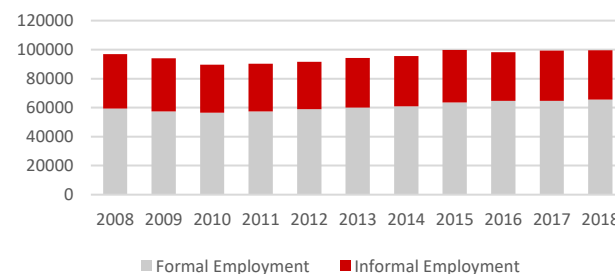
Makhado Total Employment
99 629 jobs

Formal Jobs Contribution **65.8%**
Informal Jobs Contribution **34.2%**

MUSINA LOCAL MUNICIPALITY

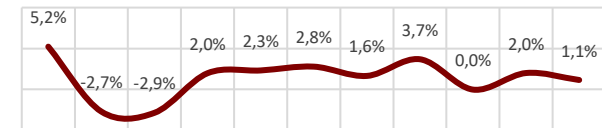


MAKHADO LOCAL MUNICIPALITY

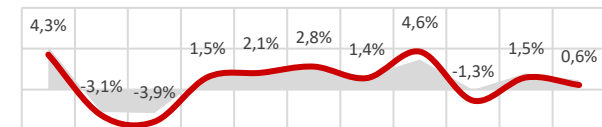


EMPLOYMENT GROWTH

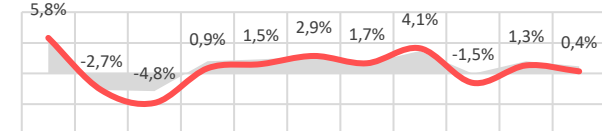
South Africa



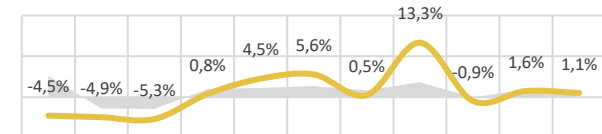
Limpopo



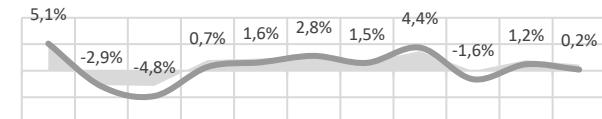
Vhembe District



Musina LM



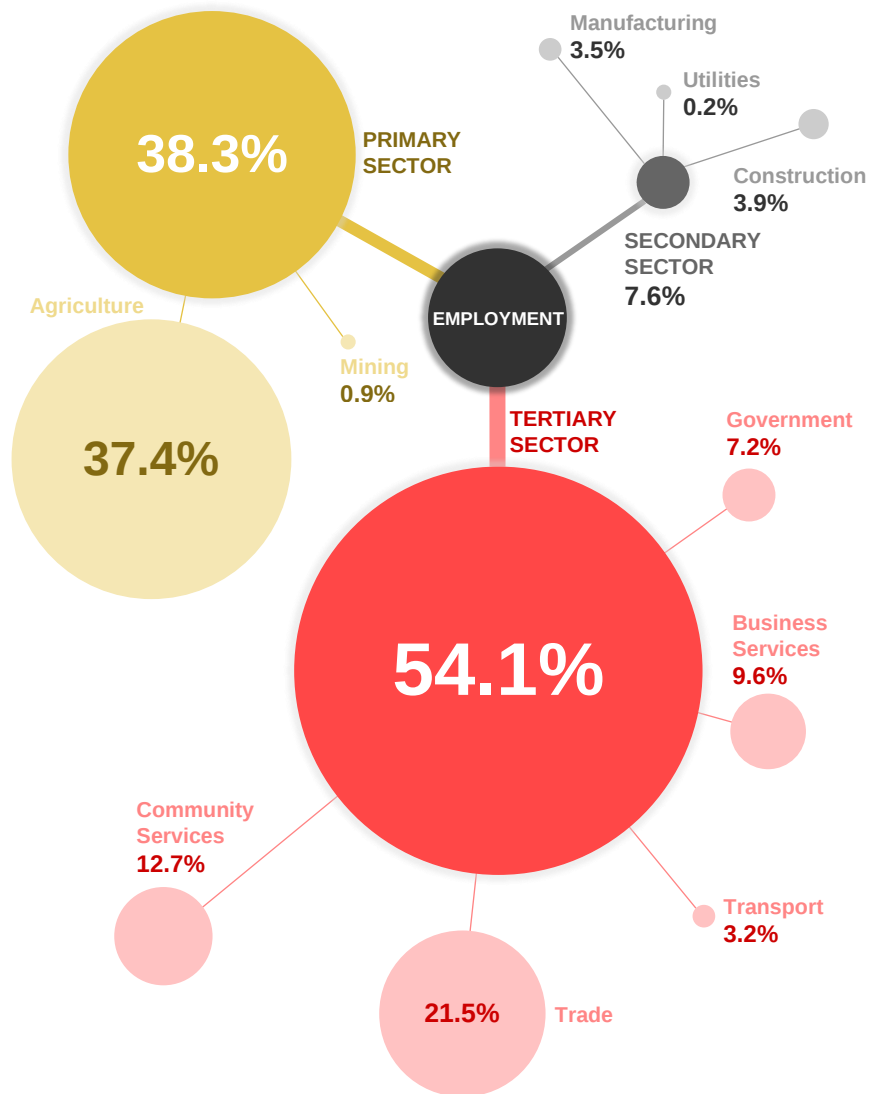
Makhado LM



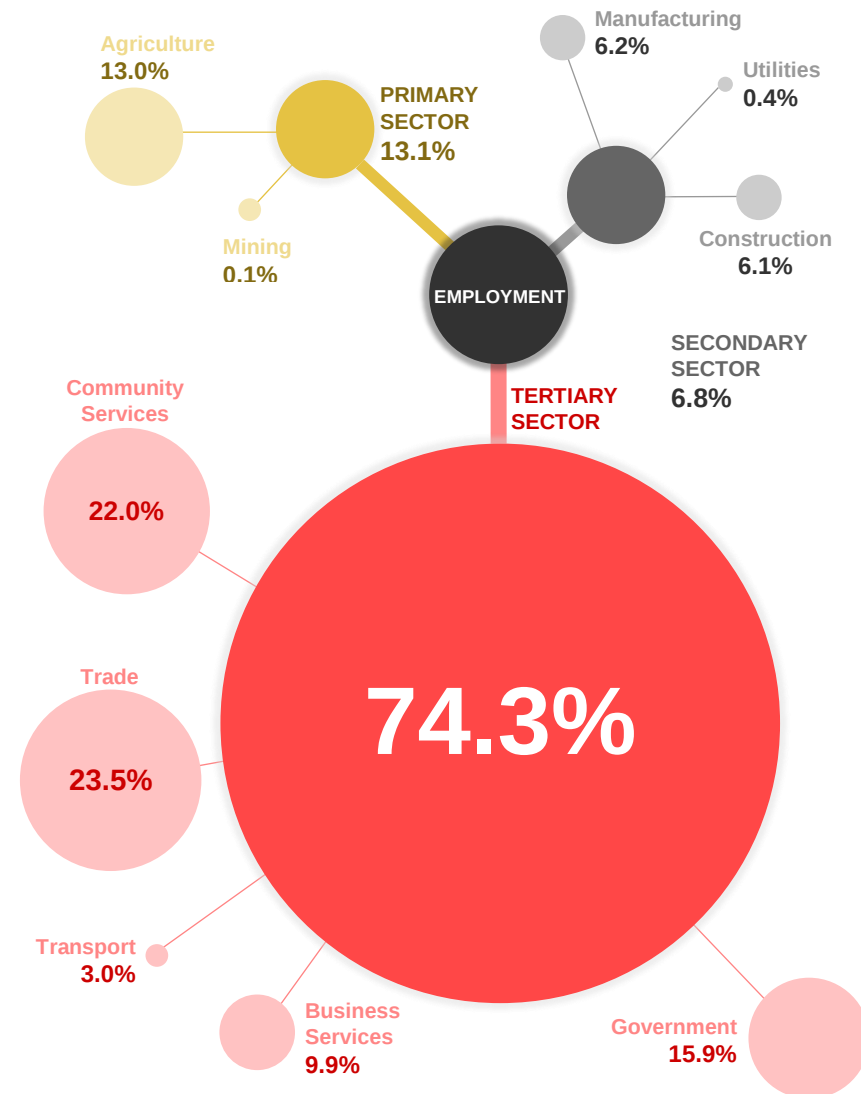
2007 - 2008 - 2009 - 2010 - 2011 - 2012 - 2013 - 2014 - 2015 - 2016 - 2017 - 2018

■ South Africa

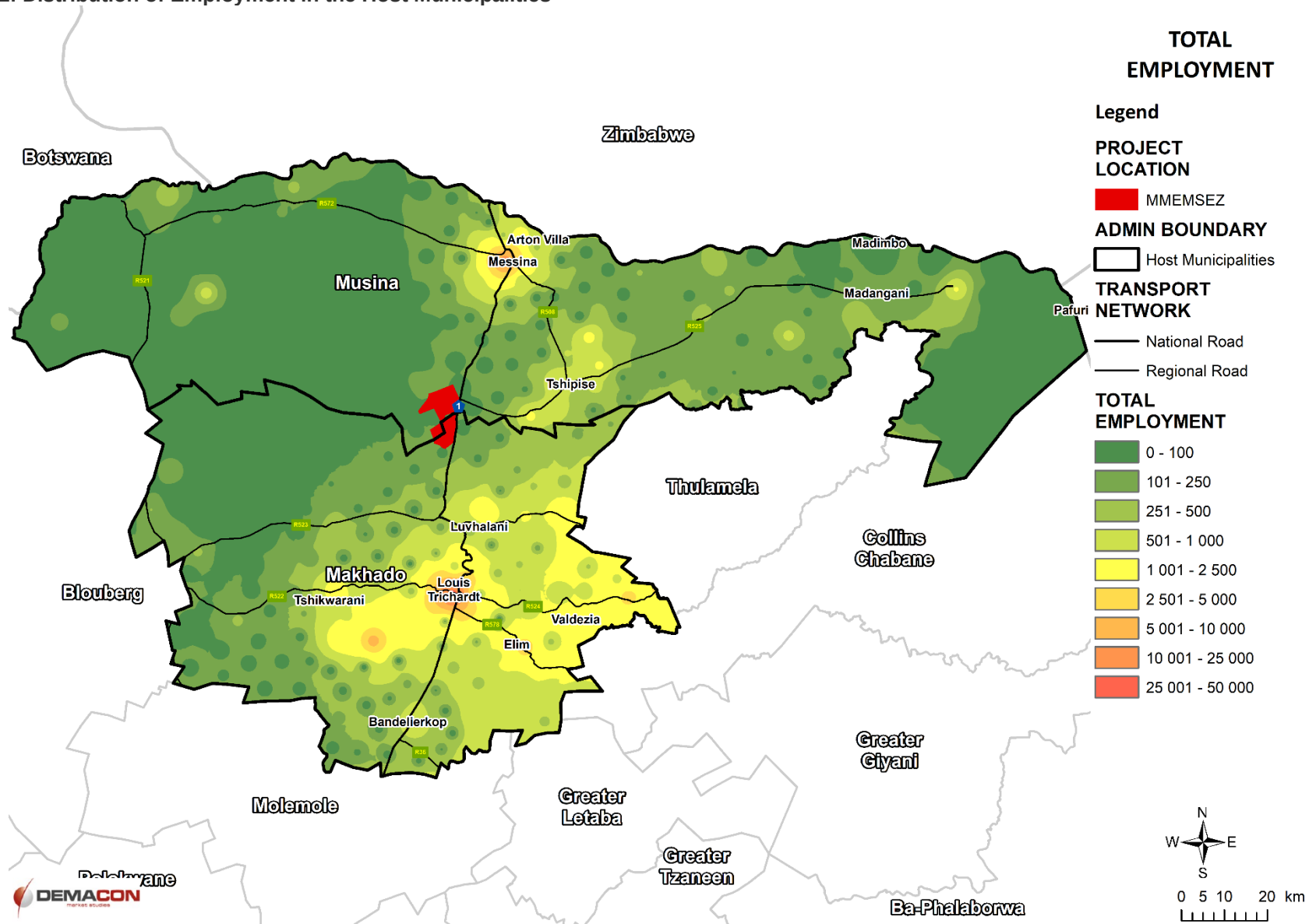
ECONOMIC SECTOR CONTRIBUTION TO TOTAL EMPLOYMENT OF THE MUSINA LOCAL MUNICIPALITY



ECONOMIC SECTOR CONTRIBUTION TO TOTAL EMPLOYMENT OF THE MAKHADO LOCAL MUNICIPALITY



Map 5.2: Distribution of Employment in the Host Municipalities



Source: DEMACON GIS, 2019

5.3.1 DISCUSSION

EMPLOYMENT SIZE

Apart from how an economic region fares with regards to its growth in output, the creation of employment opportunities is an important element of the economy. Employment generated by an economic region supports individuals and households that reside within the bounds of an economic region and allows for the circulation and movement of money through the purchasing of goods and services.

As a basis for investigating and analysing employment within the local economy and its broader spheres, consideration can be given to the size and contribution by local, district and provincial economies to their containing economies in terms of number of people employed.

The data shows that the Makhado local municipality contributes more than 40% to the total employment of the Vhembe District as appose to the Musina local economy which contributes 12.7%.

The Vhembe District economy in regard of the Limpopo economy and its employment plays a large role whereby slightly more than 22% of employment is generated within the district economy. At a national sphere, the Limpopo economy only contributes 6.7% to the total employment of the country.

Based on the employment contribution made by the host municipalities to district and provincial economies, reference can be made to the formality of employment. Employment is largely viewed in regard to whether it is in the formal economy such as any of the 10 official economic sectors and which is subject to formal legislation and taxation, or the informal economy which is economic activity not captured as part of official statistics and is largely unregulated and free of taxation.

The data shows that roughly 67.7% of persons employed in 2018 in the Musina local economy are employed in the formal economy. The historical trends indicate that formal employment has steadily been increasing since

2011 (in line with continued economic growth), whilst employment in the informal economy has marginally been increasing over the same period.

In the Makhado local economy formal employment contributes nearly two thirds of employment opportunities. Formal employment shows a marginal increase between 2011 and 2018 and aligns to the slow rate of economic growth in the local economy. Informal employment has steadily been decreasing since 2015.

SECTORAL ANALYSIS – EMPLOYMENT

The data shows that in the Musina local economy the agriculture, wholesale and retail trade and community services sectors proportionally contribute the most to employment.

In a similar fashion, the Makhado local economy employs persons proportionally within the same economic sectors as the Musina local economy.

EMPLOYMENT GROWTH

The rate at which an economic area grows in terms of employment is an indication of the capability of an economy within a designated geographic area to productively increase economic output to the extent that new employment opportunities can be created.

The Musina local economy is experiencing above average employment growth annually and outperforms national, provincial and district employment creation rates. The Makhado local economy is experiencing a growth in employment but at a subdued pace slower than that of the national, provincial and district averages.

5.4 COMPETITIVE AND COMPARATIVE ADVANTAGE ANALYSIS

Competitive Advantage Analysis (CAA) is an assessment of the structure and performance of the economy of a geographic region to identify local strengths (“competitive advantages”) and potential for economic development.

The following approach used for CAA is focussed on examining local industries/sectors to identify leading and lagging economic sectors and the potential future prospects of these sectors for employment growth.

The following section will seek to identify the Location Quotient (LQ) and Industry Target Classifications of the host economies.

5.4.1 LOCATION QUOTIENT

Local Quotient (LQ) is used as a measure of the specialisation in a geographic region meaning that, a LQ measures the concentration of certain industry sectors in an identified region relative to an aggregate/reference economy.

The LQ can further be defined by the following definition:

$$LQ = (\text{Local Employment in Industry} / \text{Total Local Employment}) / (\text{National Employment in Industry} / \text{Total National Employment})$$

The interpretation of LQ's is based on the comparison of calculated LQ's (the measure of employment concentration) for various economic sectors within a defined region.

Higher LQ scores indicate that an economic sector is a dominant role-player within the identified region as compared to a reference economy, while lower LQ scores are an indication of scarcity of certain economic sectors.

Additionally, LQ scores also provide an indication of the comparative advantage of an economic sector. A comparative advantage can be identified by LQ scores greater than 1.

In order to interpret LQ scores, Table 3.1 is provided. The table outlines LQ scores, and associated interpretation.

It should be noted that a low (or high) location quotient does not necessarily mean the industry group is small (or large), unimportant (or important) in the region – simply that it is less so or more so compared with the reference economy.

As such, a location quotient is used to calculate comparative advantages.

Table 5.1: Location Quotient Interpretations

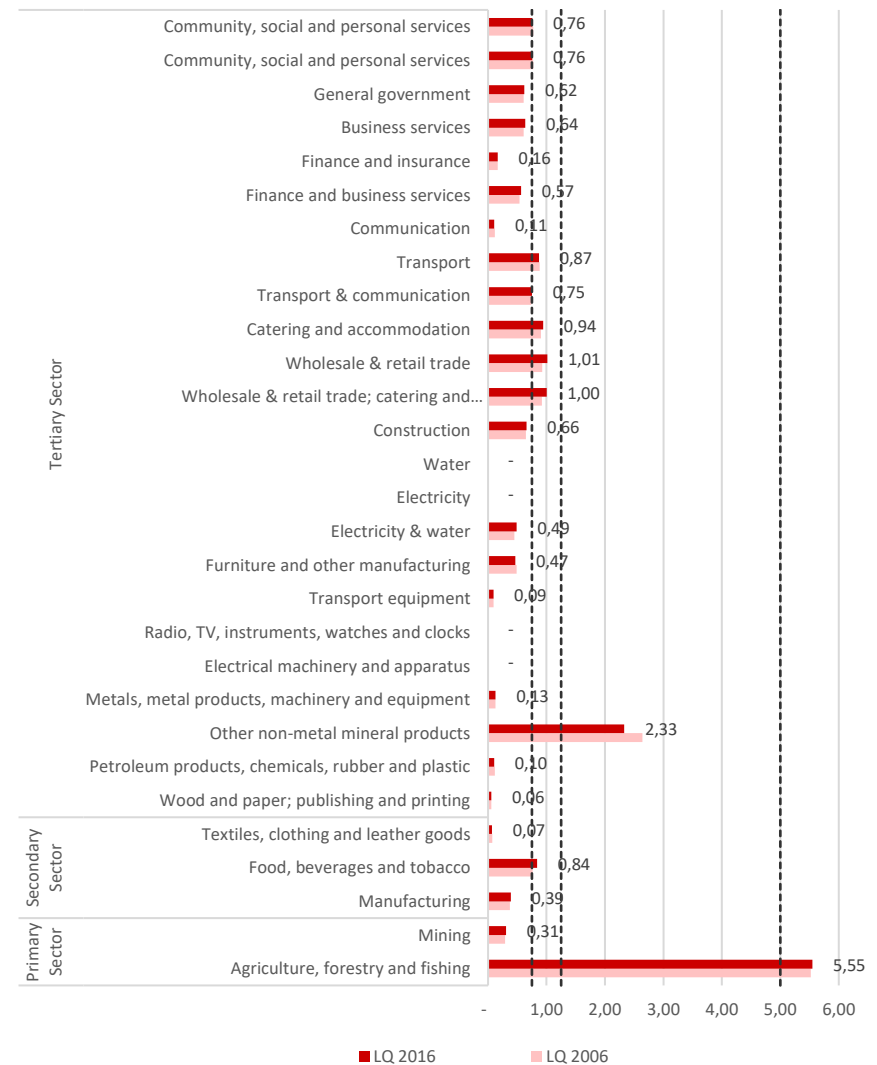
Location Quotient	Label	Interpretation
Less than 0.75	Low	Local needs are not being met and goods and services are imported
0.75 to 1.24	Medium	Most local needs are being met by the sector. The region will probably be both importing and exporting goods and services in the sector.
1.25 to 4.99	High	Sector is serving the needs that extend beyond the boundaries of the municipality – likely to export goods and services.
More than 5.00	Very High	High level of local dependence on the sector – typically a single industry community.

The following tables and figures (Table 3.2 and 3.3 and Figure 3.1 and 3.2) illustrate the LQ of the host economies between 2014 and 2018 in comparison to the national economy (reference economy). This is done in order to identify how concentrated the local economy is within the reference economy.

Table 5.2: Location Quotients per Economic Sector in the Musina Local Economy Compared to the National Economy (2014 to 2018)

Economic Sector	LQ		Label	Change
	2012	2016		
Agriculture, forestry and fishing	5.52	5.55	Very High	Increase
Mining	0.29	0.31	Low	Increase
Manufacturing	0.37	0.39	Low	Increase
Food, beverages and tobacco	0.76	0.84	Medium	Increase
Textiles, clothing and leather goods	0.07	0.07	Low	Decrease
Wood and paper; publishing and printing	0.05	0.06	Low	Increase
Petroleum products, chemicals, rubber and plastic	0.12	0.10	Low	Decrease
Other non-metal mineral products	2.64	2.33	High	Decrease
Metals, metal products, machinery and equipment	0.13	0.13	Low	Increase
Electrical machinery and apparatus	-	-	Low	Same
Radio, TV, instruments, watches and clocks	-	-	Low	Same
Transport equipment	0.09	0.09	Low	Increase
Furniture and other manufacturing	0.49	0.47	Low	Decrease
Utilities	0.45	0.49	Low	Increase
Construction	0.65	0.66	Low	Increase
Wholesale & retail trade; catering and accommodation	0.92	1.00	Medium	Increase
Wholesale & retail trade	0.92	1.01	Medium	Increase
Catering and accommodation	0.90	0.94	Medium	Increase
Transport & communication	0.74	0.75	Medium	Increase
Transport	0.88	0.87	Medium	Decrease
Communication	0.12	0.11	Low	Decrease
Finance and business services	0.54	0.57	Low	Increase
Finance and insurance	0.17	0.16	Low	Decrease
Business services	0.61	0.64	Low	Increase
General government	0.61	0.62	Low	Increase
Community, social and personal services	0.77	0.76	Medium	Decrease

Source: DEMACON Market Studies, 2019

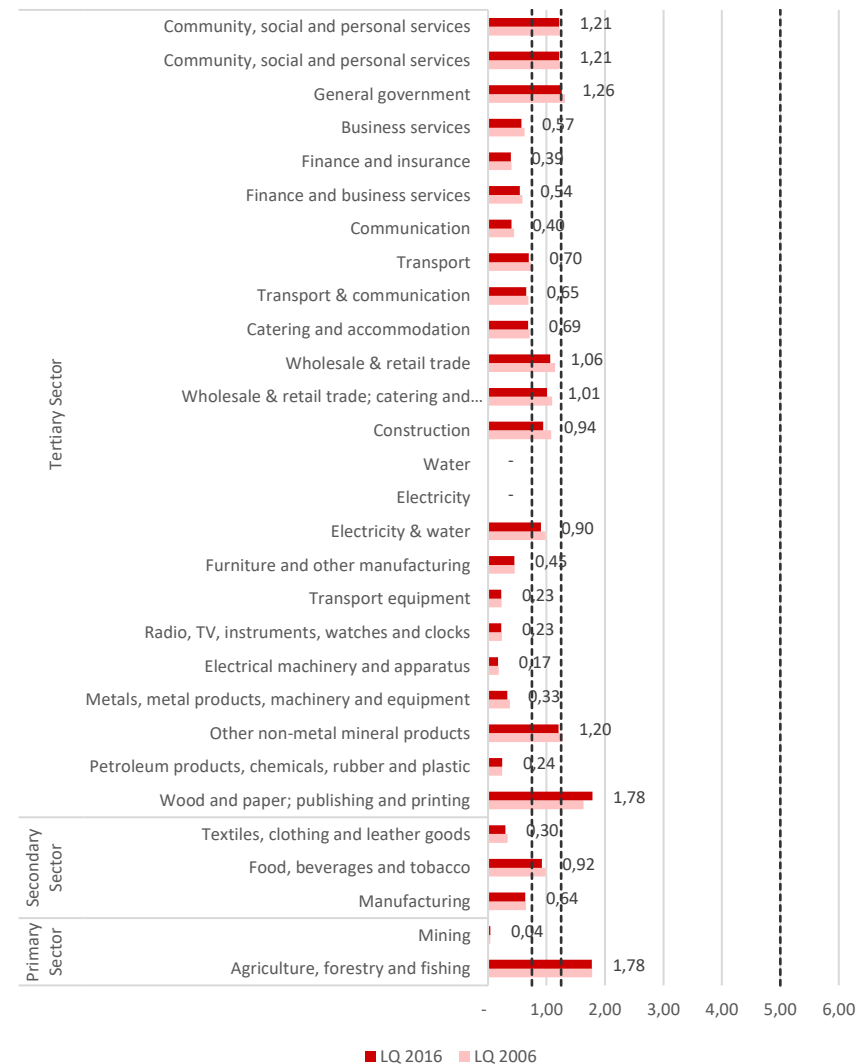
Figure 5.1: Location Quotients per Economic Sector in the Musina Local Economy Compared to the National Economy (2014 to 2018)

Source: DEMACON Market Studies, 2019

Table 5.3: Location Quotients per Economic Sector in the Makhado Local Economy Compared to the National Economy (2014 to 2018)

Economic Sector	LQ		Label	Change
	2012	2016		
Agriculture, forestry and fishing	1.78	1.78	High	Decrease
Mining	0.04	0.04	Low	Increase
Manufacturing	0.65	0.64	Low	Decrease
Food, beverages and tobacco	0.98	0.92	Medium	Decrease
Textiles, clothing and leather goods	0.33	0.30	Low	Decrease
Wood and paper; publishing and printing	1.63	1.78	High	Increase
Petroleum products, chemicals, rubber and plastic	0.24	0.24	Low	Increase
Other non-metal mineral products	1.28	1.20	Medium	Decrease
Metals, metal products, machinery and equipment	0.37	0.33	Low	Decrease
Electrical machinery and apparatus	0.18	0.17	Low	Decrease
Radio, TV, instruments, watches and clocks	0.24	0.23	Low	Decrease
Transport equipment	0.23	0.23	Low	Decrease
Furniture and other manufacturing	0.45	.45	Low	Decrease
Utilities	0.98	0.90	Medium	Decrease
Construction	1.08	0.94	Medium	Decrease
Wholesale & retail trade; catering and accommodation	1.09	1.01	Medium	Decrease
Wholesale & retail trade	1.15	1.06	Medium	Decrease
Catering and accommodation	0.71	0.69	Low	Decrease
Transport & communication	0.69	0.65	Low	Decrease
Transport	0.75	0.70	Low	Decrease
Communication	0.44	0.40	Low	Decrease
Finance and business services	0.59	0.54	Low	Decrease
Finance and insurance	0.40	0.39	Low	Decrease
Business services	0.62	0.57	Low	Decrease
General government	1.32	1.26	High	Decrease
Community, social and personal services	1.22	1.21	Medium	Decrease

Source: DEMACON Market Studies, 2019

Figure 5.2: Location Quotients per Economic Sector in the Makhado Local Economy Compared to the National Economy (2014 to 2018)

Source: DEMACON Market Studies, 2019

ECONOMIC SECTORS WITH A HIGHLY COMPETITIVE ADVANTAGE

When comparing the LQ for the Musina and Makhado local economies it becomes evident that due to subtle differences in primary employing and GVA contributing sectors the specialisation of both economies differ even though similarities can be observed.

In the Musina local economy the agriculture sector has the highest LQ (Very High) compared to other economic sectors. In effect, the remarkably high LQ is indicative of the capability of the sector to service needs outside its geo-economic region and export goods and services.

The LQ of the agriculture sector has shown a slight increase since 2014 and is also one the largest proportional contributors to the local economy's output while also being the largest employer. The sector thus has a competitive advantage over other economic sectors.

Additionally, the only other economic sector that shows a competitive advantage over other economic sectors in the Musina local economy is the manufacturing of other non-metal mineral products.

In contradiction, the Makhado local economy LQ outcomes do not show a clear dominant economic sector but highlights a number of sectors that score high LQ scores.

Economic sectors such as agriculture, the manufacturing of wood and paper products and general government services have a competitive advantage over other economic sectors.

Only the agriculture and general government services sectors have proportionally high contributions to the total employment and GVA output of the local economy.

The agriculture and general government sectors do show a decrease in LQ scores since 2014 as appose to the manufacturing of wood and paper products which shows an increase.

ECONOMIC SECTORS WITH A MEDIUM COMPETITIVE ADVANTAGE

In the Musina local economy, economic sectors that show medium LQ scores include: the manufacturing of food, beverages and tobacco products; wholesale, retail, trade, catering and accommodation; and transport and communication.

Within the Makhado local economy, economic sectors that show medium LQ scores include: the manufacturing of food, beverages and tobacco products; the manufacturing of other non-metal mineral products; the provision of utilities; construction; wholesale, retail, and trade; and community and social services.

Although economic sectors such as wholesale, retail and trade and construction proportionally contribute sizeable GVA output and employment opportunities as appose to manufacturing related sectors, these sectors have the propensity to service local needs, but most likely import and export goods and services to conduct business.

ECONOMIC SECTORS WITH A LOW COMPETITIVE ADVANTAGE

The remaining economic sectors for the Musina and Makhado local economies have low LQ scores indicating that these sectors generally do not service local needs and that goods and services have to be imported.

TRESS INDEX

When considering indicators such as the Tress Index (measures the diversification or concentration of an economy) for a local economy, the Musina (49.3) and Makhado (57.0) local economies are moderately diversified (score close to 100 is indicative of a concentrated economy dependent on a single or at most two driving economic sectors).

5.4.3 INDUSTRY TARGET CLASSIFICATION

This classification is based on a combination of the location quotient, Provincial / District Sector Growth and LSRG / DSRG (Local/District Sector Relative Growth) values and it is expressed qualitatively not quantitatively. It is somewhat different in the way that it classifies the sectors, the categories are phrases that suggest the kind of prospects for growth that could be expected and, in some cases, whether the sector should be a retention target.

Table 5.4: Industry Target Classification System - Categories

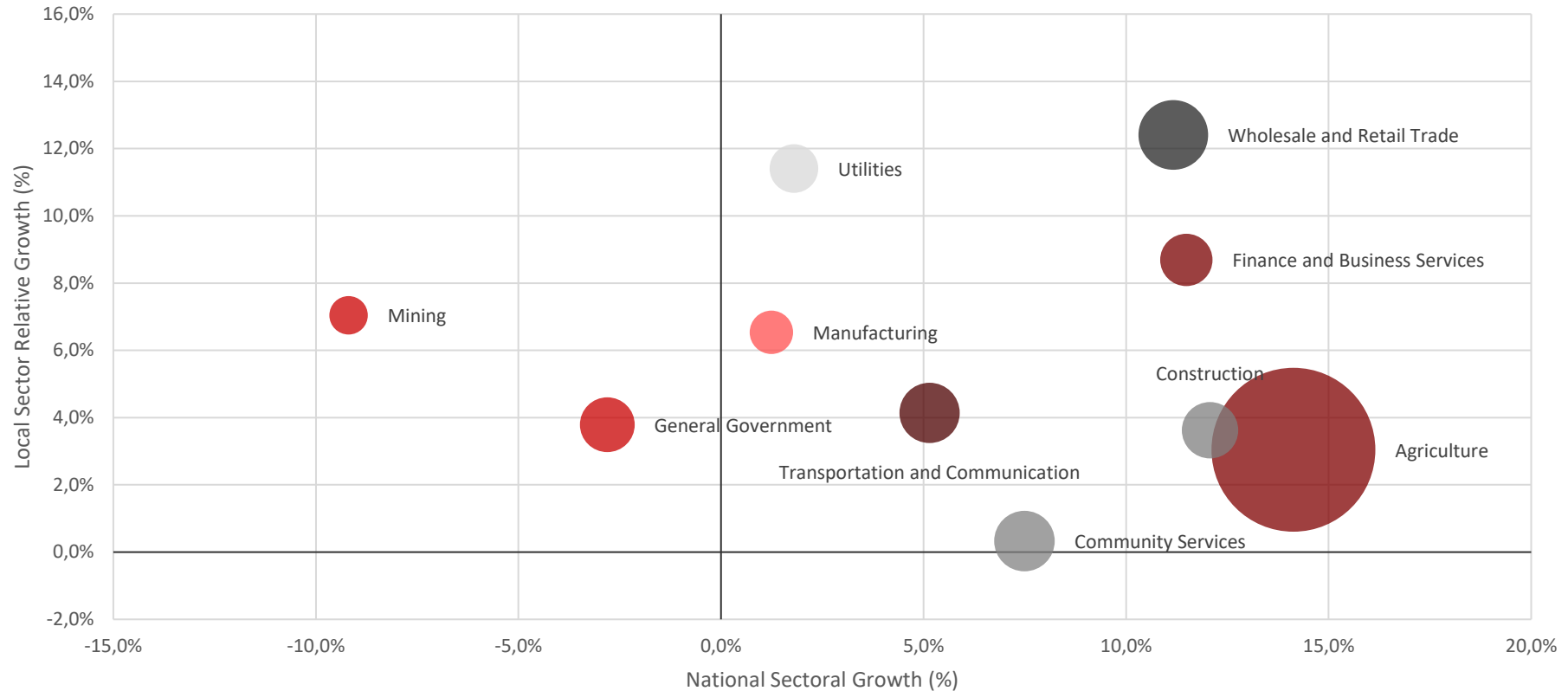
LSRG	Provincial Growth	Location Quotient	Classification	Definition
Leading	Positive	Medium or High (> 0.75)	Current Strength	Sector currently growing strong
		Low (<0.75)	Emerging Strength	Indication that a sector is experiencing growth and can be classified as having definite development potential
	Negative	Medium or High (> 0.75)	Prospects limited by external trends	External trends represent a multitude of elements that strain development and growth and include competitiveness, exchange rate, fluctuations, performance of international economies, oil prices etc.
		Low (<0.75)	Prospects limited by external trends and weak base	A weak base is an indication that the sector is structurally not particularly strong and limited in its diversification. This along with external trends strain the development prospects
Lagging	Positive	Medium or High (> 0.75)	High priority retention target	Indication of a previously dominant or economically important sector that needs to retain its positive economic position – making it a priority for growth and development.
		Low (<0.75)	Prospects limited by weak base and declining competitiveness	A weak base indicates a need for diversification and declining competitiveness reflects that it might not be structural as strong as is needed for development potential
	Negative	Medium or High (> 0.75)	Prospects limited by external trends and declining competitiveness	External trends hinder development, supported by declining levels of competitiveness.
		Low (<0.75)	Prospects limited overall	Growth prospects are limited to a minimum for this sector and the economy should rather focus on other economic sectors.

The following shows the industry target classification for the Musina local economy compared to the National economy.

Table 5.5: Musina Local Economy Industry Target Classification (2014 to 2018)

Economic Sector	LQ		National Sector % Growth		LSRG		Industry Targeting
	Value	Class	Value	Class	Value	Class	
Agriculture, forestry and fishing	5,55	Very High	14,1%	Positive	3,0%	Leading	Current Strength
Mining and quarrying	0,31	Low	-9,2%	Negative	7,0%	Leading	Prospects limited by weak base and external trends
Manufacturing	0,39	Low	1,2%	Positive	6,5%	Leading	Emerging Strength
Food, beverages and tobacco	0,84	Medium	12,0%	Positive	13,6%	Leading	Current Strength
Textiles, clothing and leather goods	0,07	Low	-7,1%	Negative	-0,1%	Lagging	Prospects limited overall
Wood and paper; publishing and printing	0,06	Low	-6,6%	Negative	6,6%	Leading	Prospects limited by weak base and external trends
Petroleum products, chemicals, rubber and plastic	0,10	Low	6,8%	Positive	-9,4%	Lagging	Prospects limited by weak base and declining competitiveness
Other non-metal mineral products	2,33	High	5,5%	Positive	-10,4%	Lagging	High priority retention target
Metals, metal products, machinery and equipment	0,13	Low	-3,1%	Negative	4,4%	Leading	Prospects limited by weak base and external trends
Electrical machinery and apparatus	-	Low	-10,1%	Negative	0,0%	Lagging	Prospects limited overall
Radio, TV, instruments, watches and clocks	-	Low	7,5%	Positive	0,0%	Lagging	Prospects limited by weak base and declining competitiveness
Transport equipment	0,09	Low	1,9%	Positive	3,1%	Leading	Emerging Strength
Furniture; other manufacturing	0,47	Low	-0,3%	Negative	-2,0%	Lagging	Prospects limited overall
Electricity, gas and water	0,49	Low	1,8%	Positive	11,4%	Leading	Emerging Strength
Construction	0,66	Low	12,1%	Positive	3,6%	Leading	Emerging Strength
Wholesale and retail trade, catering and accommodation	1,00	Medium	11,2%	Positive	12,4%	Leading	Current Strength
Wholesale and retail trade	1,01	Medium	10,0%	Positive	13,0%	Leading	Current Strength
Catering and accommodation services	0,94	Medium	19,7%	Positive	8,1%	Leading	Current Strength
Transport, storage and communication	0,75	Medium	5,1%	Positive	4,1%	Leading	Current Strength
Transport and storage	0,87	Medium	9,0%	Positive	1,1%	Leading	Current Strength
Communication	0,11	Low	-11,8%	Negative	-7,5%	Lagging	Prospects limited overall
Finance, insurance, real estate and business services	0,57	Low	11,5%	Positive	8,7%	Leading	Emerging Strength
Finance and insurance	0,16	Low	-0,6%	Negative	0,6%	Leading	Prospects limited by weak base and external trends
Business services	0,64	Low	13,9%	Positive	7,4%	Leading	Emerging Strength
General government	0,62	Low	-2,8%	Negative	3,8%	Leading	Prospects limited by weak base and external trends
Community, social and personal services	0,76	Medium	7,5%	Positive	0,3%	Leading	Current Strength

Figure 5.3: Musina Local Economy Industry Target Classification (2014 to 2018)



Source: DEMACON Market Studies, 2019

Note: The size of each data point reflects the location quotient value. The y-axis quantifies market share movements, whereas the x-axis quantifies market size.

The information shows that in the Musina local economy current strength economic sectors include: agriculture; the manufacturing of food, beverages and tobacco products; wholesale, retail, trade, catering and accommodation; transportation and storage; and community and personal services. Economic sectors closely related to the proposed SEZ show that mining is limited by a weak base and external trends, and manufacturing and utility services are emerging strengths in the local economy.

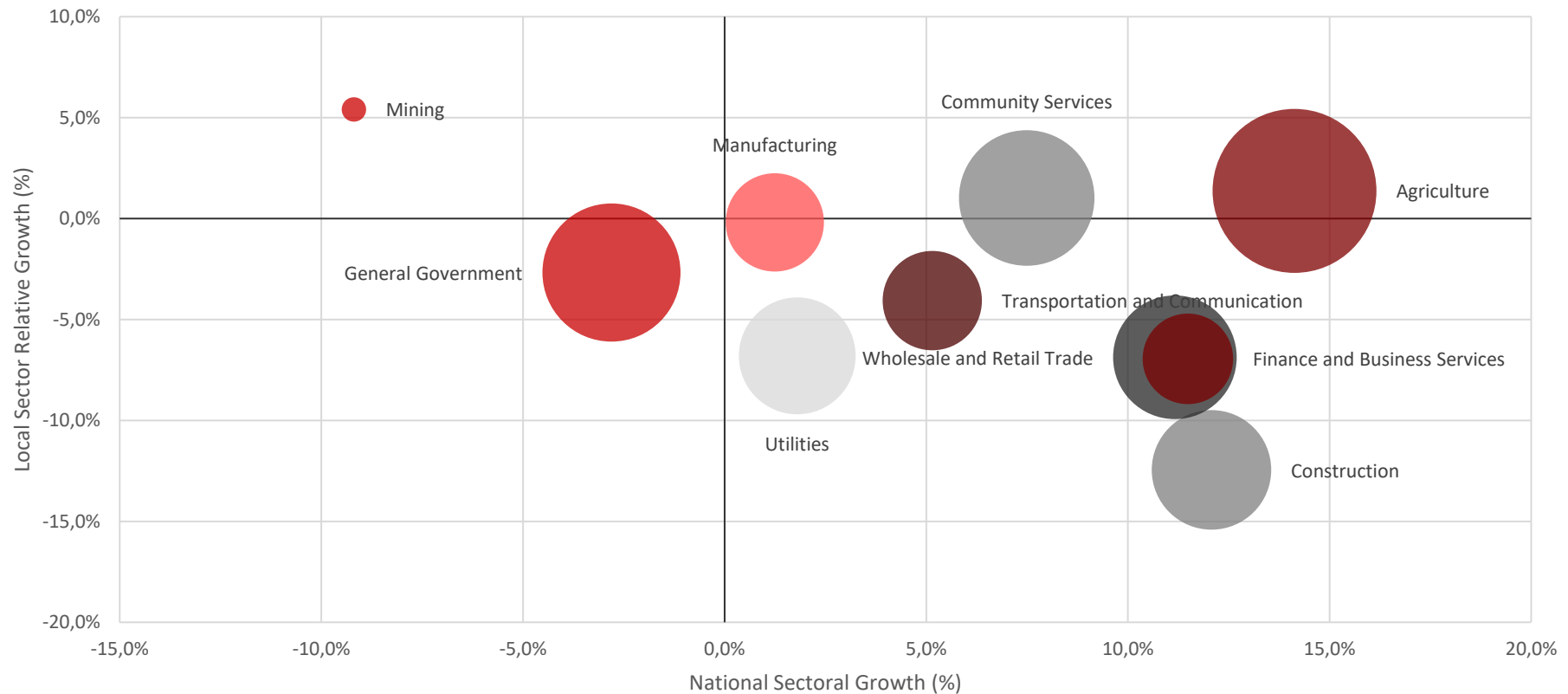
The manufacturing of non-metal mineral products is identified as a high priority retention target meaning that the sector has to potential to become a major economic role-player not only as a source of economic growth and output but as an employment industry.

The following shows the industry target classification for the Makhado local economy compared to the National economy.

Table 5.6: Makhado Local Economy Industry Target Classification (2014 to 2018)

Economic Sector	LQ		National Sector % Growth		LSRG		Industry Targeting
	Value	Class	Value	Class	Value	Class	
Agriculture, forestry and fishing	1,78	High	14,1%	Positive	1,4%	Leading	Current Strength
Mining and quarrying	0,04	Low	-9,2%	Negative	5,4%	Leading	Prospects limited by weak base and external trends
Manufacturing	0,64	Low	1,2%	Positive	-0,2%	Lagging	Prospects limited by weak base and declining competitiveness
Food, beverages and tobacco	0,92	Medium	12,0%	Positive	-5,6%	Lagging	High priority retention target
Textiles, clothing and leather goods	0,30	Low	-7,1%	Negative	-8,8%	Lagging	Prospects limited overall
Wood and paper; publishing and printing	1,78	High	-6,6%	Negative	10,2%	Leading	Prospects limited by external trends
Petroleum products, chemicals, rubber and plastic	0,24	Low	6,8%	Positive	2,0%	Leading	Emerging Strength
Other non-metal mineral products	1,20	Medium	5,5%	Positive	-5,0%	Lagging	High priority retention target
Metals, metal products, machinery and equipment	0,33	Low	-3,1%	Negative	-9,0%	Lagging	Prospects limited overall
Electrical machinery and apparatus	0,17	Low	-10,1%	Negative	0,0%	Lagging	Prospects limited overall
Radio, TV, instruments, watches and clocks	0,23	Low	7,5%	Positive	0,0%	Lagging	Prospects limited by weak base and declining competitiveness
Transport equipment	0,23	Low	1,9%	Positive	-1,3%	Lagging	Prospects limited by weak base and declining competitiveness
Furniture; other manufacturing	0,45	Low	-0,3%	Negative	0,3%	Leading	Prospects limited by weak base and external trends
Electricity, gas and water	0,90	Medium	1,8%	Positive	-6,8%	Lagging	High priority retention target
Construction	0,94	Medium	12,1%	Positive	-12,4%	Lagging	High priority retention target
Wholesale and retail trade, catering and accommodation	1,01	Medium	11,2%	Positive	-6,9%	Lagging	High priority retention target
Wholesale and retail trade	1,06	Medium	10,0%	Positive	-6,8%	Lagging	High priority retention target
Catering and accommodation services	0,69	Low	19,7%	Positive	-2,4%	Lagging	Prospects limited by weak base and declining competitiveness
Transport, storage and communication	0,65	Low	5,1%	Positive	-4,1%	Lagging	Prospects limited by weak base and declining competitiveness
Transport and storage	0,70	Low	9,0%	Positive	-5,2%	Lagging	Prospects limited by weak base and declining competitiveness
Communication	0,40	Low	-11,8%	Negative	-7,1%	Lagging	Prospects limited overall
Finance, insurance, real estate and business services	0,54	Low	11,5%	Positive	-6,9%	Lagging	Prospects limited by weak base and declining competitiveness
Finance and insurance	0,39	Low	-0,6%	Negative	-2,4%	Lagging	Prospects limited overall
Business services	0,57	Low	13,9%	Positive	-8,4%	Lagging	Prospects limited by weak base and declining competitiveness
General government	1,26	High	-2,8%	Negative	-2,7%	Lagging	Prospects limited by external trends and declining competitiveness
Community, social and personal services	1,21	Medium	7,5%	Positive	1,0%	Leading	Current Strength

Figure 5.4: Musina Local Economy Industry Target Classification (2014 to 2018)



Source: DEMACON Market Studies, 2019

Note: The size of each data point reflects the location quotient value. The y-axis quantifies market share movements, whereas the x-axis quantifies market size.

The information shows that in the Makhado local economy current strength economic sectors include agriculture and community and personal services. Economic sectors closely related to the proposed SEZ show that mining is limited by a weak base and external trends, manufacturing is limited by a weak base and declining competitiveness, and utility services are a high priority retention target.

Other high priority retention target economic sectors include: the manufacturing of food, beverage and tobacco products; the manufacturing of other non-metal mineral products; construction industries; and wholesale and retail trade. An emerging strength in the local economy is the manufacturing of petroleum products, chemicals, rubber and plastics.

5.5 SYNTHESIS

The following provides a concise overview of Chapter 3 in order to outline the key salient factors, influences and trends impacting on the economies of the Musina and Makhado host municipalities.



ECONOMIC STRUCTURE AND PERFORMANCE

✓ ECONOMIC ACTIVITY AND SIZE

- The Musina and Makhado local municipalities contribute 10.5% and 41.4% to the total GVA of the Vhembe DM.
- The Vhembe district municipality contributes 16.0% to the total GVA of the Limpopo Province
- The Limpopo Province contributes slightly more than 7% to the National GVA.
- The manufacturing sector in both municipalities contribute marginally to the total output of the host municipalities.

✓ SECTORAL ANALYSIS

- The largest proportional contributing sectors to total economic output in the Musina Municipality are:
 - wholesale and retail trade,
 - mining and quarrying, and
 - general government.
- The largest proportional contributing sectors to total economic output in the Makhado Municipality are:
 - general government,
 - wholesale and retail trade, and
 - financial and business services.

✓ ECONOMIC GROWTH

- The average annual growth rate for the Musina local economy has maintained a growth rate consistently higher than national, provincial and district averages over the short and medium term.
- The average annual economic growth rate of the Musina local economy has steadily been decelerating since 2011 and

maintains average annual growth below national, provincial and district growth rates.



EMPLOYMENT STRUCTURE AND TRENDS

✓ EMPLOYMENT SIZE

- The Makhado local municipality contributes more than 40% to the total employment of the Vhembe District as appose to the Musina local economy which contributes 12.7%.
- Slightly more than 22% of provincial employment is generated within the Vhembe district economy. At a national sphere, the Limpopo economy only contributes 6.7% to the total employment of the country.

✓ SECTORAL ANALYSIS

- The largest proportional contributing sectors to total employment in the Musina Municipality are:
 - agriculture,
 - wholesale and retail trade, and
 - community services.
- The largest proportional contributing sectors to total economic output in the Makhado Municipality are:
 - agriculture,
 - wholesale and retail trade, and
 - community services.

✓ EMPLOYMENT GROWTH

- The Musina local economy is experiencing above average employment growth annually and out performs national, provincial and district employment creation rates.
- The Makhado local economy is experiencing a growth in employment but at a subdued pace slower than that of the national, provincial and district averages.



COMPETITIVE AND COMPARATIVE ADVANTAGE

- ✓ ECONOMIC SECTORS WITH HIGHLY COMPETITIVE ADVANTAGE
 - Economic sectors such as agriculture, the manufacturing of wood and paper products and general government services have a competitive advantage over other economic sectors.
- ✓ ECONOMIC SECTORS WITH MEDIUM COMPETITIVE ADVANTAGE
 - In the Musina local economy, economic sectors with a medium competitive advantage include: the manufacturing of food, beverages and tobacco products; wholesale, retail, trade, catering and accommodation; and transport and communication.
 - In the Makhado local economy, economic sectors with a medium competitive advantage include: the manufacturing of food, beverages and tobacco products; the manufacturing of other non-metal mineral products; the provision of utilities; construction; wholesale, retail, and trade; and community and social services.
- ✓ INDUSTRY TARGET CLASSIFICATION
 - Musina Local Economy
 - Current strength economic sectors include: agriculture; the manufacturing of food, beverages and tobacco products; wholesale, retail, trade, catering and accommodation; transportation and storage; and community and personal services.
 - Manufacturing and utility services are emerging strengths in the local economy.
 - The manufacturing of non-metal mineral products is identified as a high priority retention target meaning that the sector has the potential to become a major economic role-player not only as a source of economic growth and output but as an employment industry.
 - Makhado Local Economy
 - Current strength economic sectors include: agriculture and community and personal services.

- Manufacturing is limited by a weak base and declining competitiveness.
- Other high priority retention target economic sectors include: the manufacturing of food, beverage and tobacco products; the manufacturing of other non-metal mineral products; construction industries; and wholesale and retail trade.
- An emerging strength in the local economy is the manufacturing of petroleum products, chemicals, rubber and plastics.

DEMOGRAPHIC PROFILE



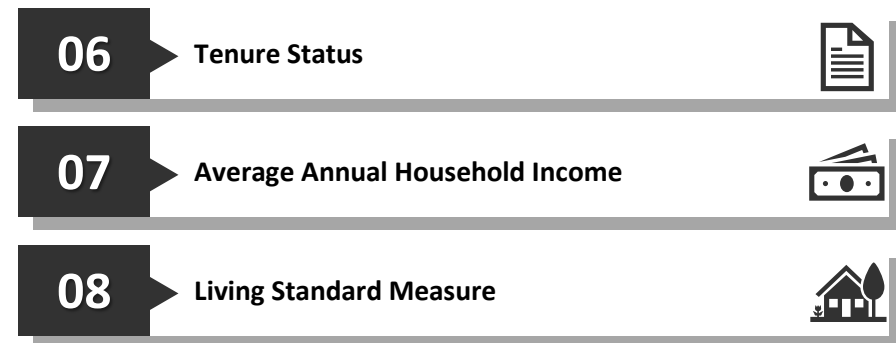
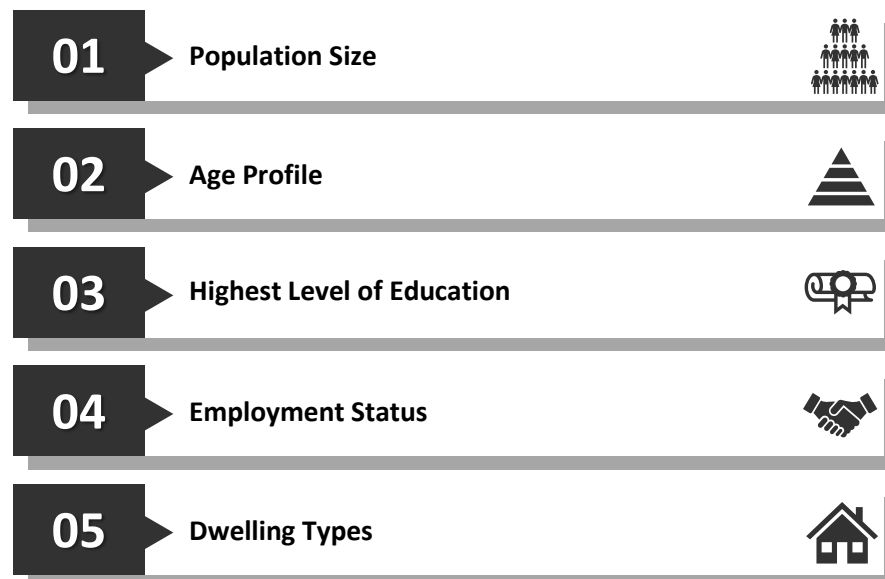
6 DEMOGRAPHIC PROFILE

6.1 INTRODUCTION

The purpose of this chapter is to provide a socio-economic overview of the host municipalities (Musina and Makhado Local Municipality), as well as the supporting municipalities (municipal authorities directly adjacent to host municipalities).

The chapter provides insight and analysis of the socio-economic participants in the study area and focusses on information pertaining to the size and distribution of population/households, the income generated by households, general education levels, the dwellings in which households reside and their tenure status, and the employment status of the economically active market segment.

The following sections provide a concise overview of the local economy in terms of:

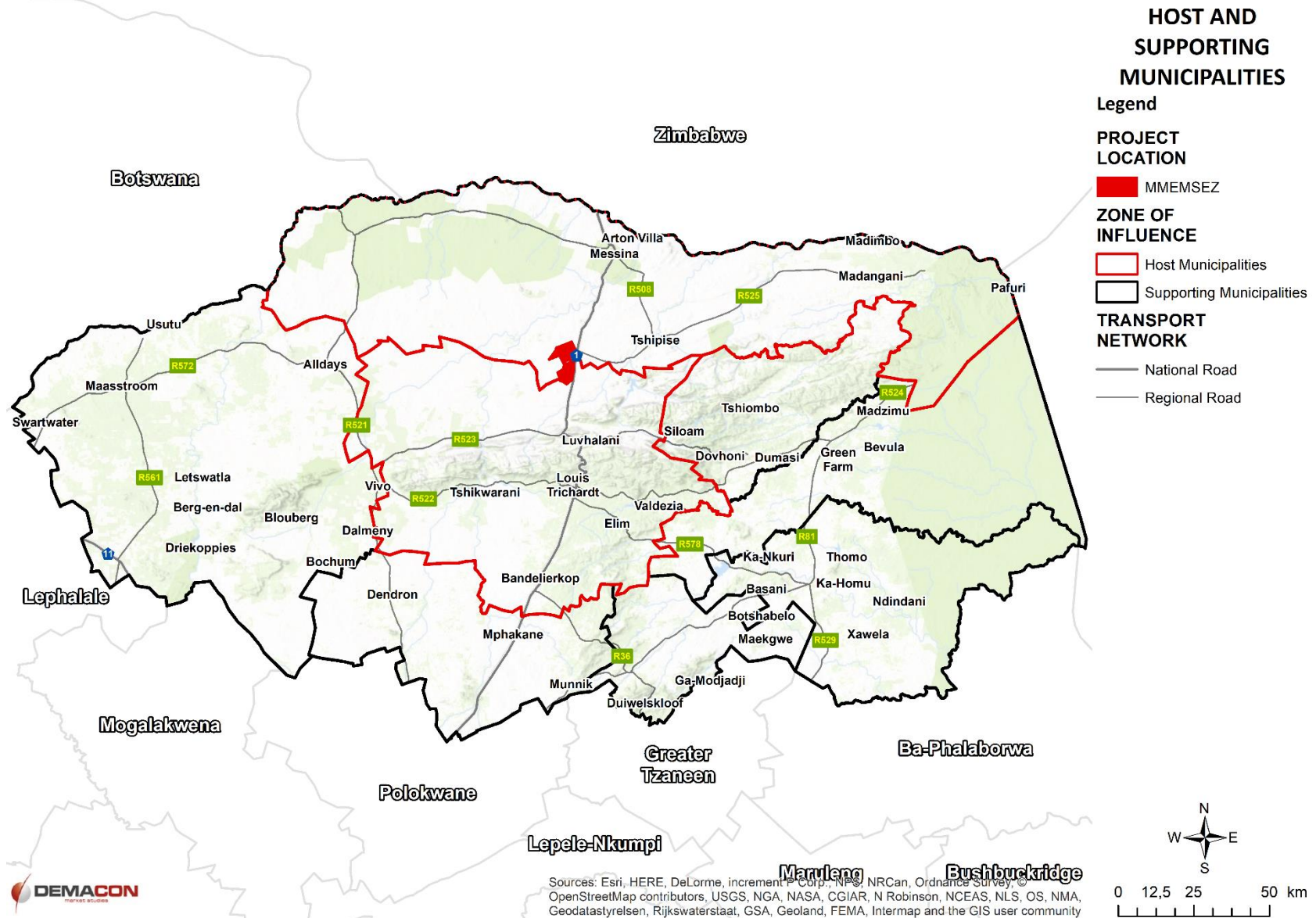


6.2 STUDY AREA DELINEATION

The study area to which the chapter and its inherent information relates to is based on the host municipalities (Musina and Makhado Local Municipality) and the supporting municipalities (Municipal authorities directly adjacent to host municipalities) that relate to the locality of the proposed SEZ.

To show the study area, Map 6.1 provides a geographic perspective of the host and supporting municipalities.

Map 6.1: Geography of Host and Supporting Municipalities in the Context of the Proposed Musina-Makhado Special Economic Zone

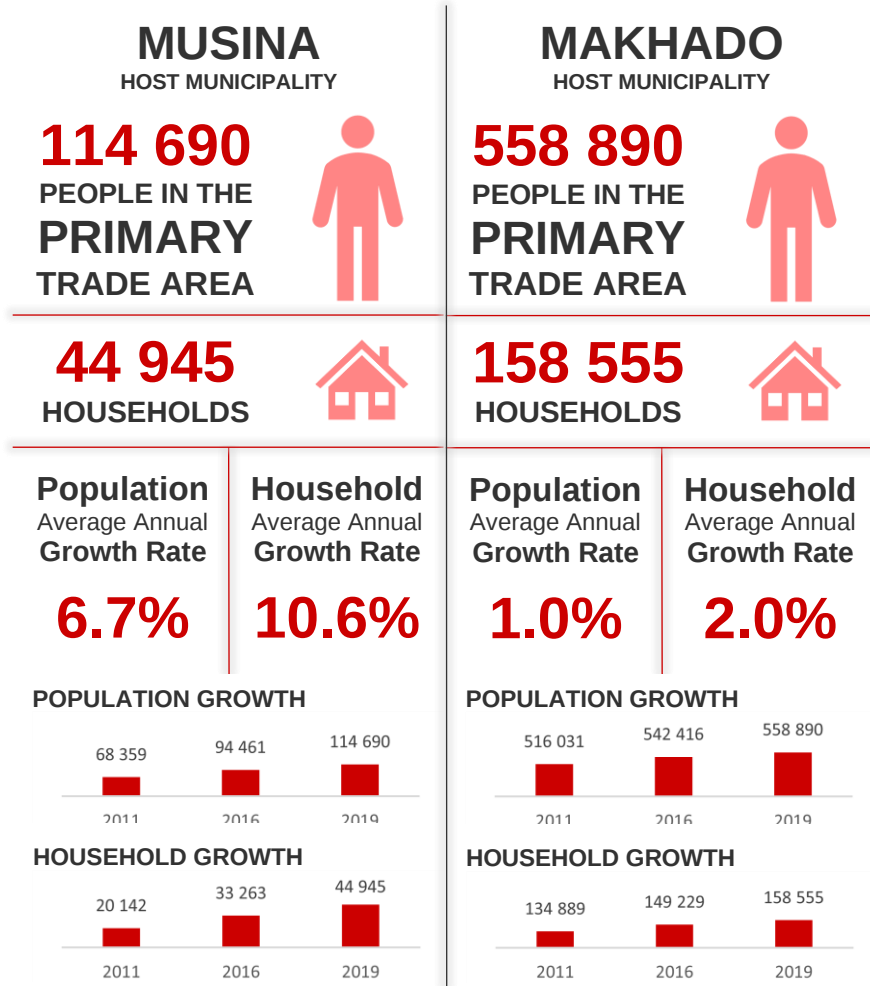


Source: DEMACON GIS, 2019

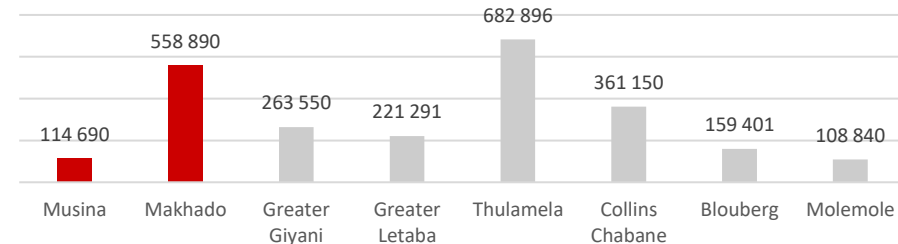
6.3 POPULATION AND HOUSEHOLDS

The following section seeks to outline the number of people and households that reside within the study area and identify the average household size of households. Additionally, a comparison between the inherent population and households present during 2011 will be compared to the current 2019 population.

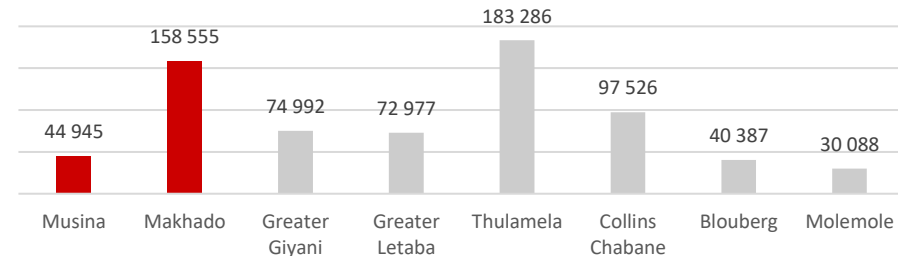
Figure 6.1: Population and Household Size



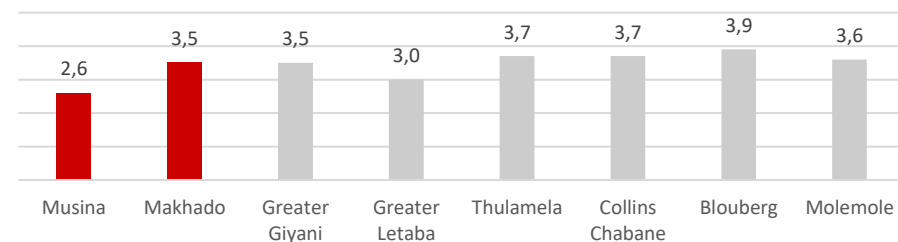
POPULATION SIZE OF THE HOST AND SUPPORTING MUNICIPALITIES



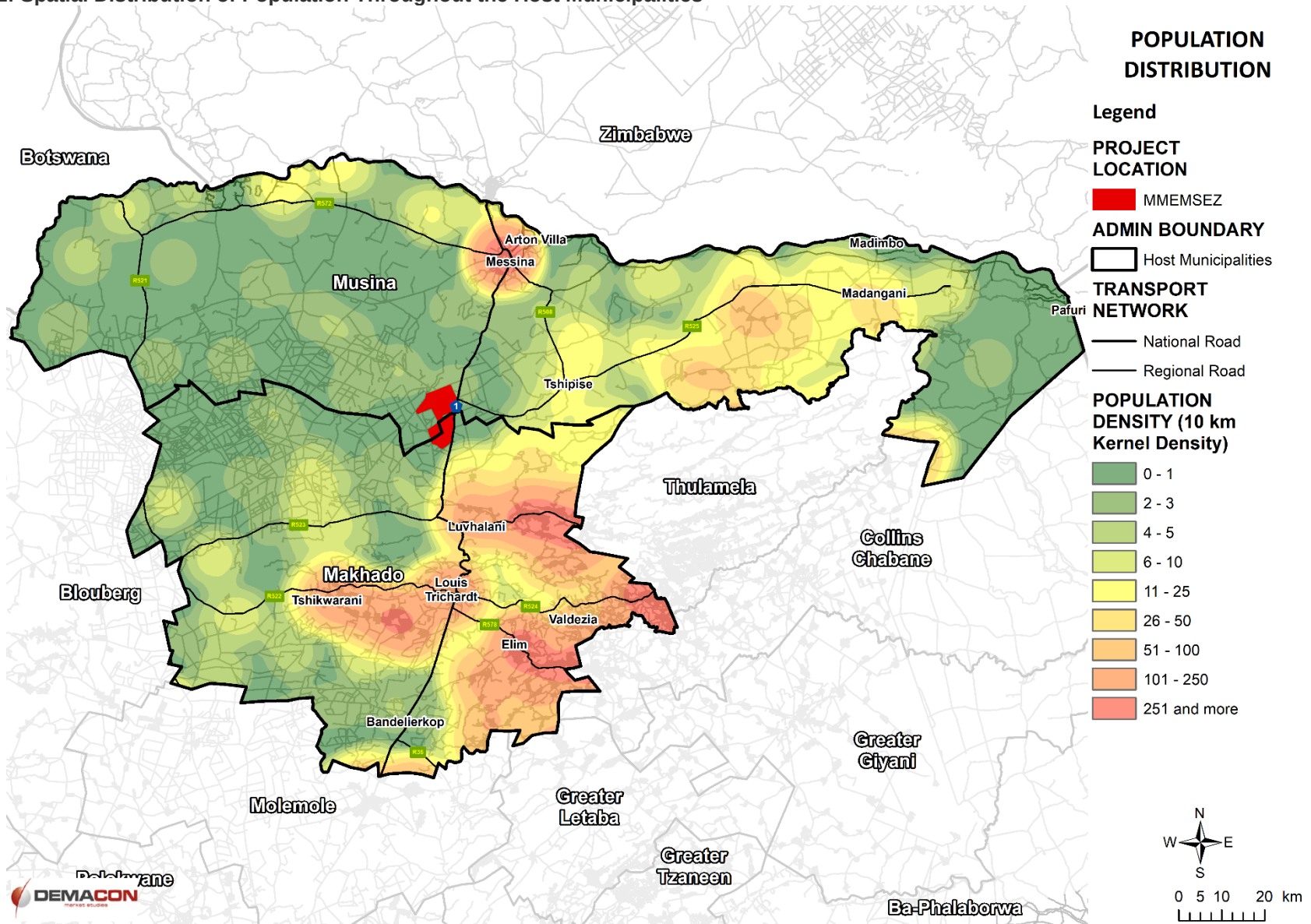
NUMBER OF HOUSEHOLDS OF THE HOST AND SUPPORTING MUNICIPALITIES



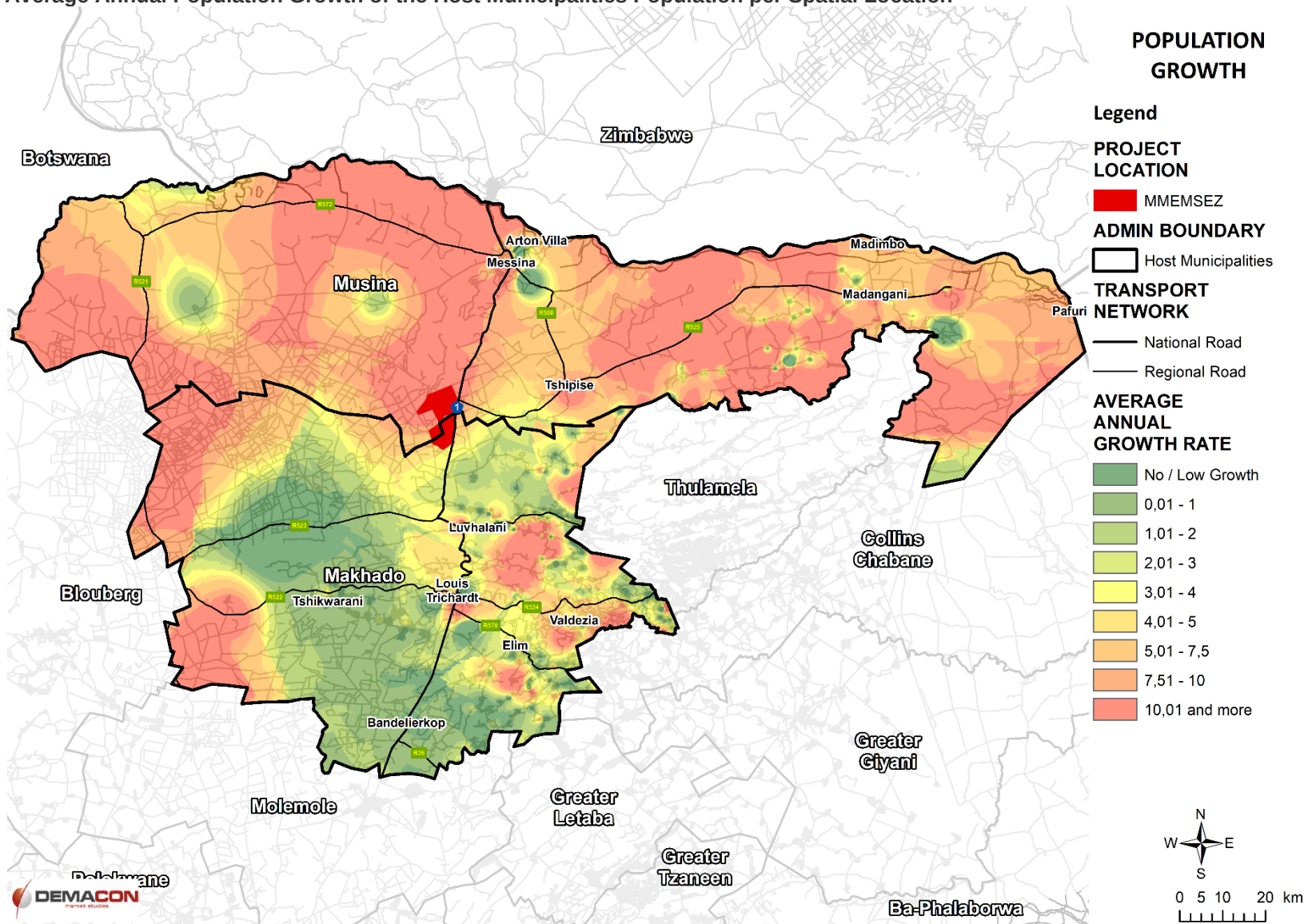
AVERAGE HOUSEHOLD SIZE OF THE HOST AND SUPPORTING MUNICIPALITIES



Map 6.2: Spatial Distribution of Population Throughout the Host Municipalities



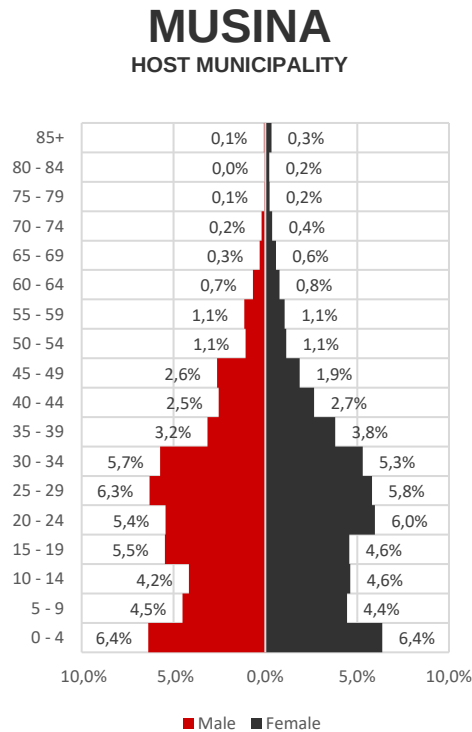
Map 6.3: Average Annual Population Growth of the Host Municipalities Population per Spatial Location



6.4 AGE PROFILE

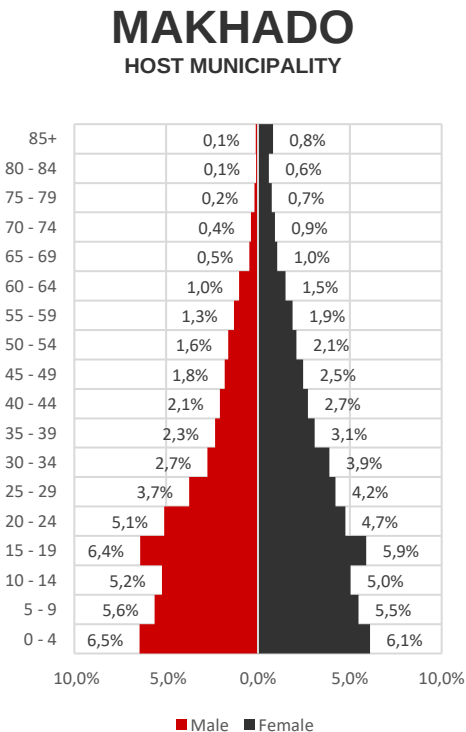
The age profile of the study area serves as an indicator for consumers active within the current market. Consumer behaviour is largely associated with age-profiles because of differentiations in wants and needs of different age groups. In the context of the proposed SEZ, the age profile assists in understanding the current and potential workforce that could be active as part of operations and also informs elements such as movement, migration and family planning.

Figure 6.2: Age and Gender Profile of the Host and Supporting Municipalities



49.9%
of the population is
MALE

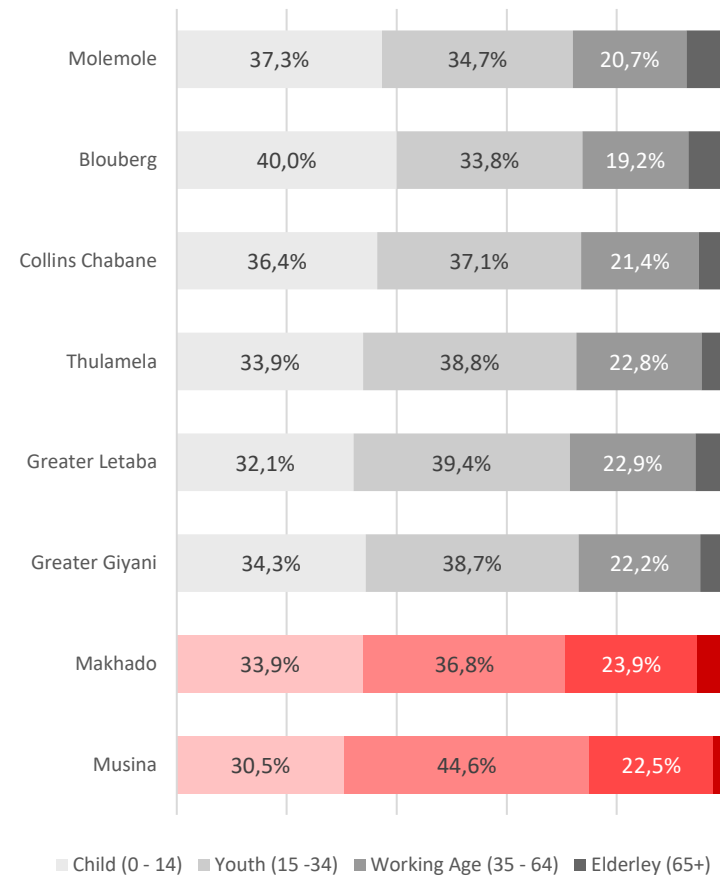
50.1%
of the population is
FEMALE



46.8%
of the population is
MALE

53.2%
of the population is
FEMALE

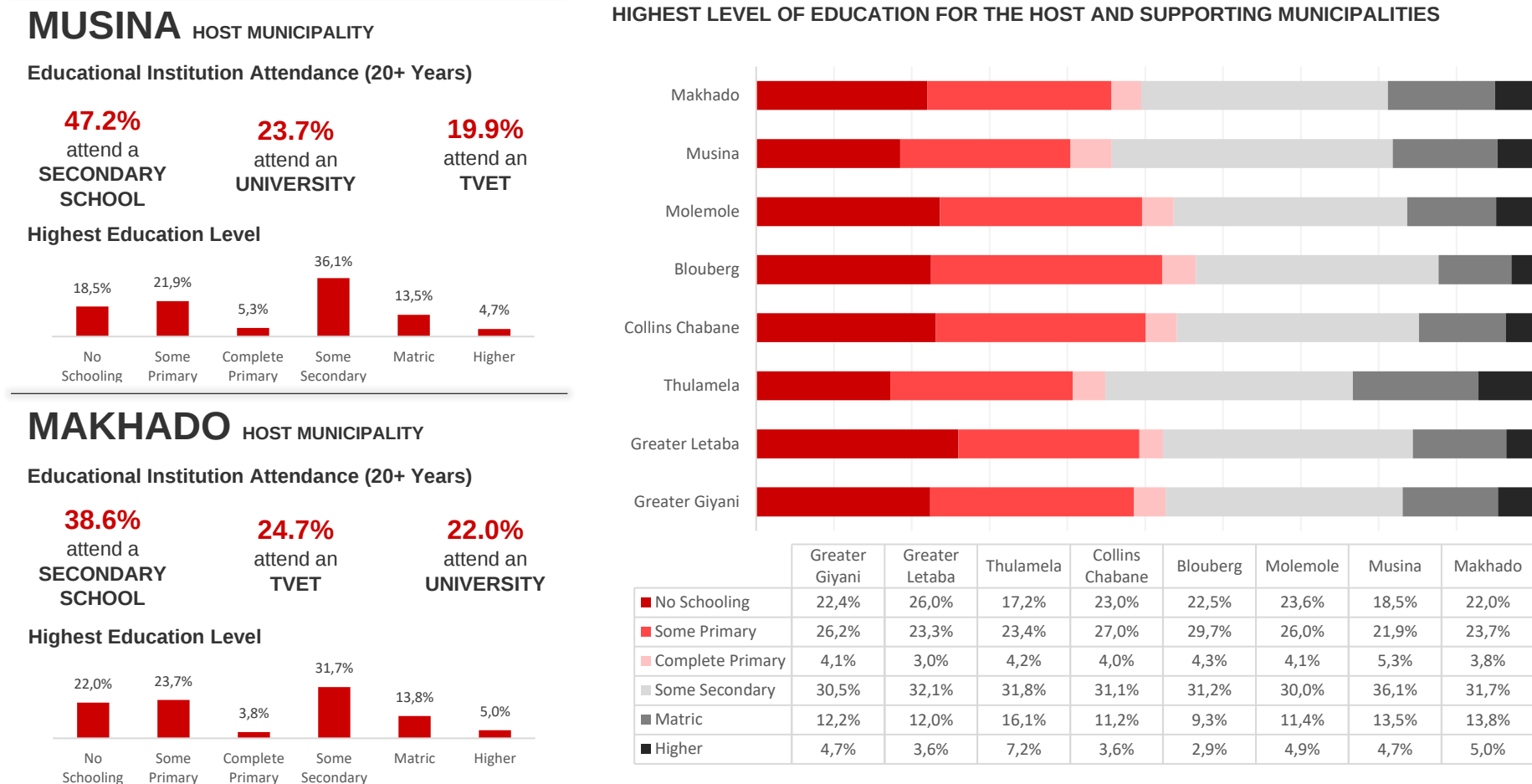
AGE PROFILE OF THE HOST AND SUPPORTING MUNICIPALITIES



6.6 HIGHEST LEVEL OF EDUCATION

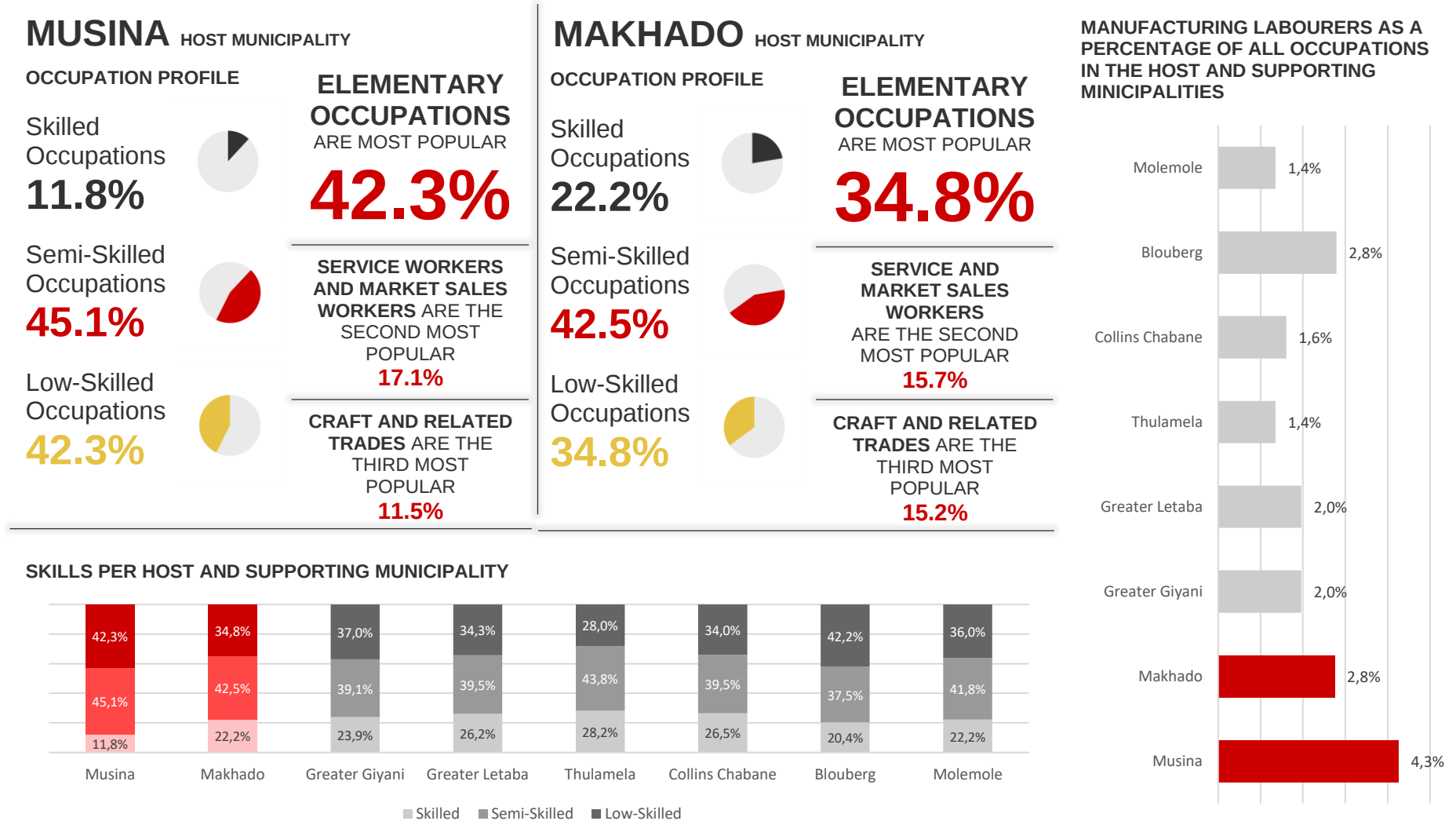
The highest level of education serves as a proxy of human development within an identified geographic region. The highest level of education is indicative of the diversity of potential skilled labour and assists in understanding the dynamics associated with skills development and capabilities. The level of employment also functions as an important indicator, impacting on the level of human development as well as on the disposable income that a community may have at its disposal.

Figure 6.3: Highest Level of Education for the Host and Supporting Municipalities



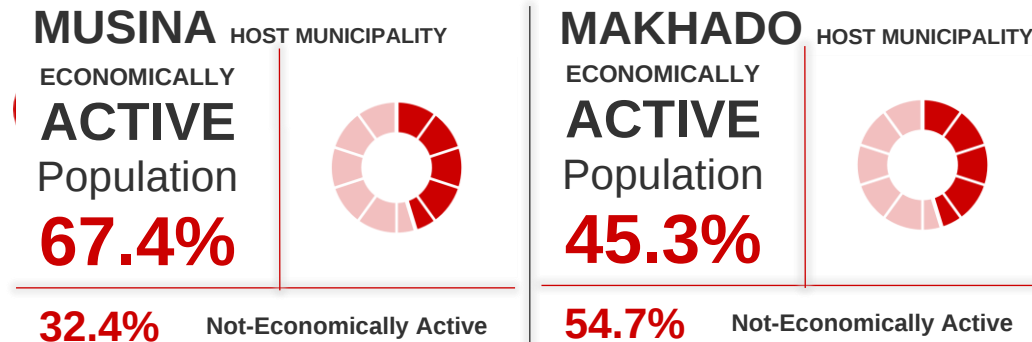
6.7 OCCUPATION PROFILE AND SKILLS

Apart from the highest level of education obtained by the resident population of the host and supporting municipalities, the level of skills present in the local economy is important. The level of skills provides an indication of the extent of occupational preference and proficiency in the host and supporting municipalities and also outlines the extent to which the local labour force is adaptable to the introduction of new business and industry.

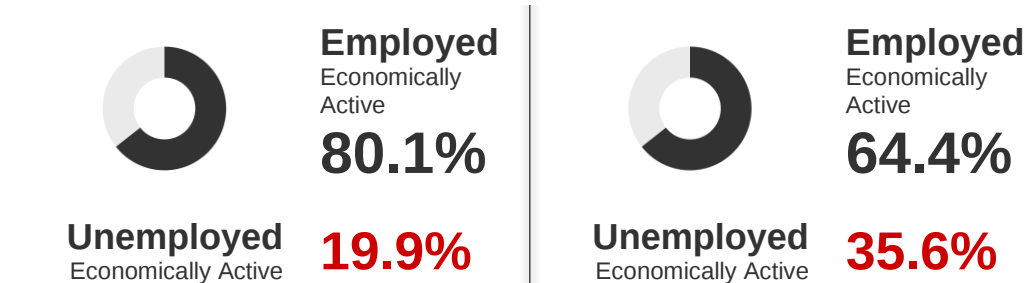


6.8 EMPLOYMENT PROFILE AND LABOUR ABSORPTION

The occupational profile as well as level of skills in the local labour force is defined by the availability of employment opportunities in the local market. Thus it is important to consider the current employment and unemployment rate of the host and supporting economies in order to understand the extent to which the local economy is sufficiently supplying job opportunities for the youth to enter into the active labour force.

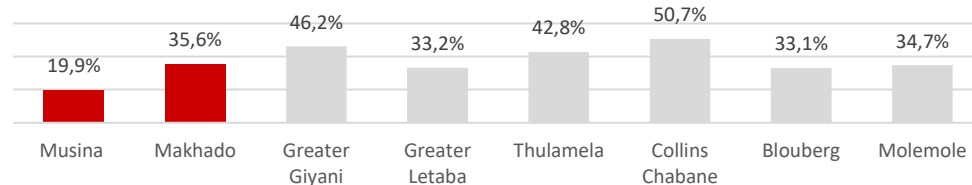


Economically active population refers to a person of working age 15 to 65 who are either employed or unemployed. Not economically active population refers to ages 0 to 14 and 65 and older, persons unable to work or persons engaged in educational activities or are homemakers.



Employed and unemployed persons are considered to be economically active and thus is a segment of the economically active percentage.

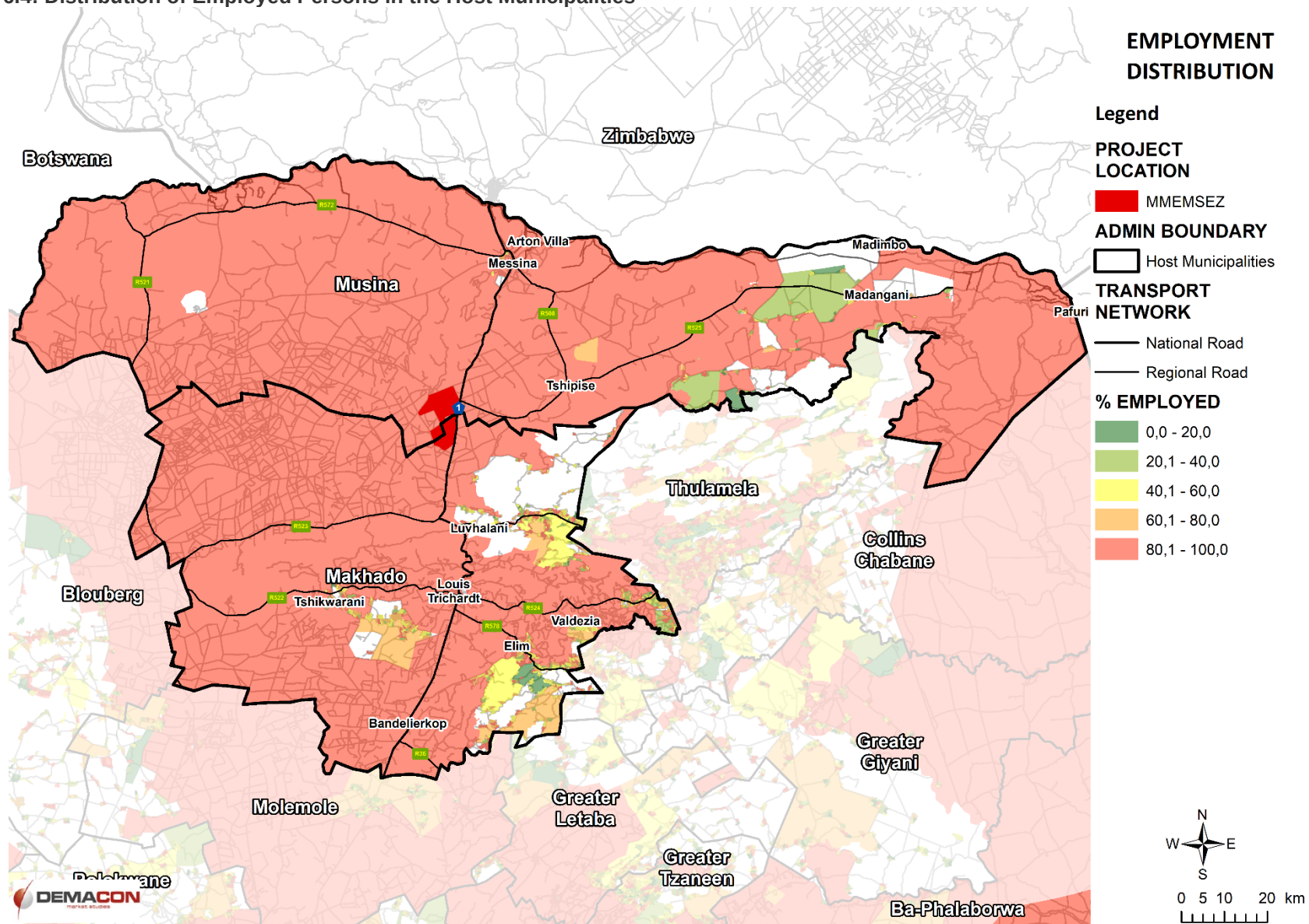
UNEMPLOYMENT RATE OF THE HOST AND SUPPORTING MUNICIPALITIES



LABOUR ABSORPTION PROFILE

	LABOUR ABSORPTION RATE	AVERAGE NUMBER OF NEW ECONOMICALLY ACTIVE POPULATION PER YEAR	AVERAGE NUMBER OF NEW JOBS CREATED PER YEAR	EFFECT
Musina	55,6	1 299	203	UNDERSUPPLY OF JOBS
Makhado	30,0	4 231	517	UNDERSUPPLY OF JOBS
Greater Giyani	20,2	1 378	108	UNDERSUPPLY OF JOBS
Greater Letaba	29,1	1 139	-92	UNDERSUPPLY OF JOBS
Thulamela	24,3	5 588	647	UNDERSUPPLY OF JOBS
Collins Chabane	18,8	801	92	UNDERSUPPLY OF JOBS
Blouberg	23,5	-285	-194	LABOUR FORCE AND JOBS DECLINING
Molemole	32,0	-101	-173	LABOUR FORCE AND JOBS DECLINING

Figure 6.4: Distribution of Employed Persons in the Host Municipalities



Source: DEMACON GIS, 2019

6.9 DWELLING TYPE

Dwelling types for the purpose of the section is focused on the variety of typologies associated with the dwelling in which households reside in the host and supporting municipalities. Dwelling typologies provide a platform from which a deeper understanding can be formulated regarding the choice and preference of dwelling in which to reside, and the associated impact and/or strain that different dwelling typologies can place on the delivery of services.

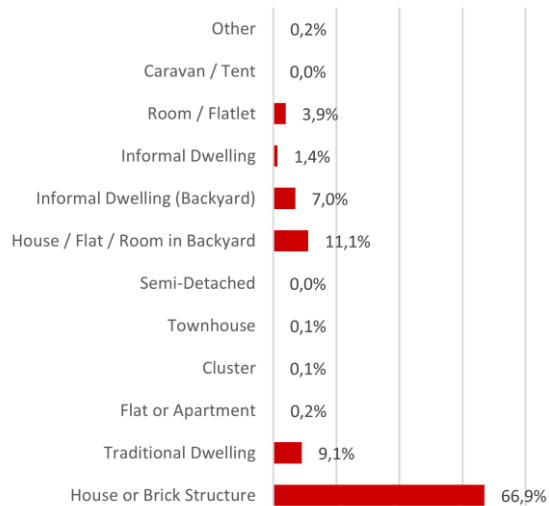
Figure 6.5: Dwelling Typologies for the Host and Supporting Municipalities

MUSINA HOST MUNICIPALITY

Majority of Households Reside in a **Formal Dwelling** **82.4%**

8.3% of households reside in an **informal dwelling**

9.1% of households reside in a **traditional dwelling**

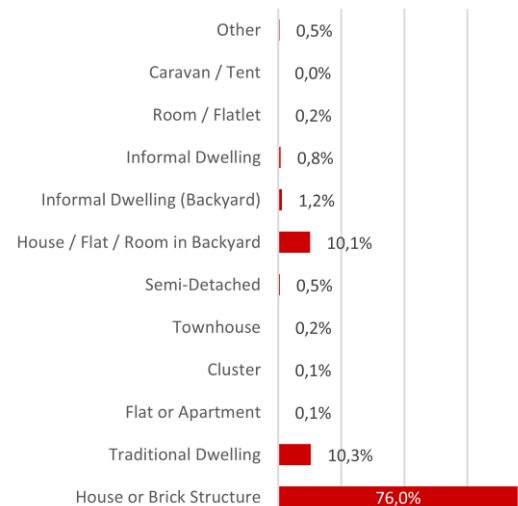


MAKHADO HOST MUNICIPALITY

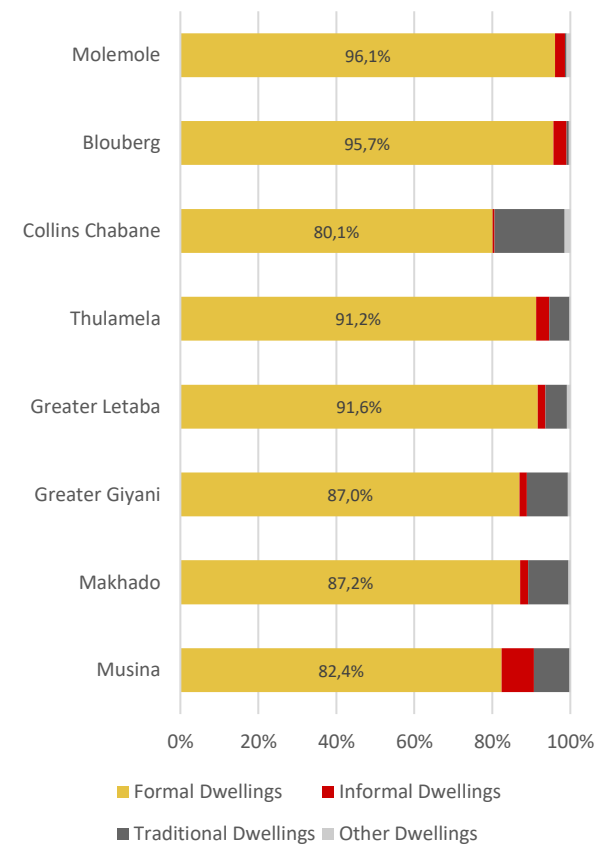
Majority of Households Reside in a **Formal Dwelling** **87.4%**

2.0% of households reside in an **informal dwelling**

10.3% of households reside in a **traditional dwelling**



DWELLING TYPES IN THE HOST AND SUPPORTING MUNICIPALITIES



6.10 TENURE STATUS

Tenure status, which is associated with dwelling typologies, is an indication of the level of ownership of a given property by households in a specific geographic region. Ownership, as shown in the data below, seeks to provide an indication whether a household owns a property and has paid for the property, owns the property and is in the process of paying the purchasing price, are renting the property or dwelling in which they reside, or occupies the property rent-free.

Figure 6.6: Tenure Typology for the Host and Supporting Municipalities

MUSINA HOST MUNICIPALITY



33.1%

of households **own** and have **paid** for the property where they reside

10.9%

of households **own** but have **not finished paying** for the property where they reside

40.5%

of households **rent** the property where they reside

15.5%

of households **occupy** the property where they reside **rent free**

MAKHADO HOST MUNICIPALITY



75.2%

of households **own** and have **paid** for the property where they reside

5.3%

of households **own** but have **not finished paying** for the property where they reside

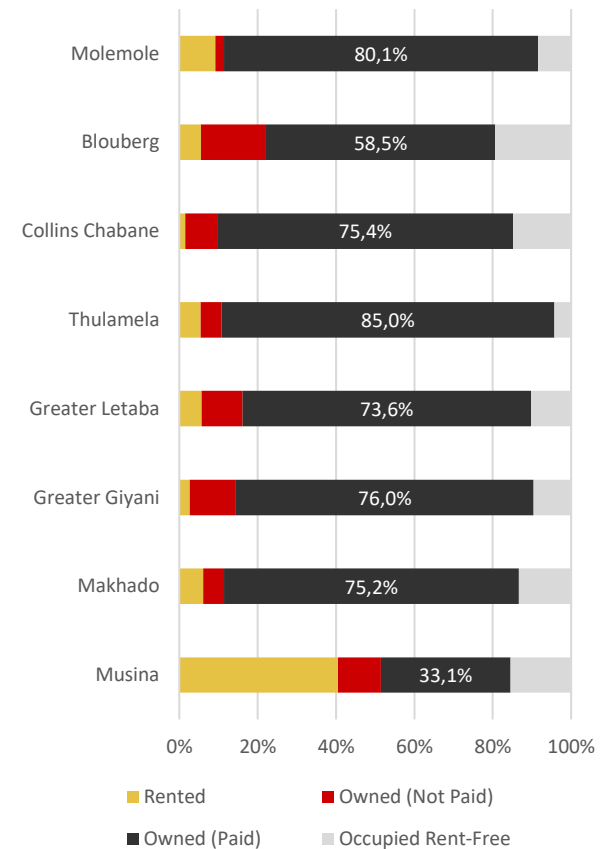
6.1%

of households **rent** the property where they reside

13.4%

of households **occupy** the property where they reside **rent free**

TENURE TYPOLOGY IN THE HOST AND SUPPORTING MUNICIPALITIES

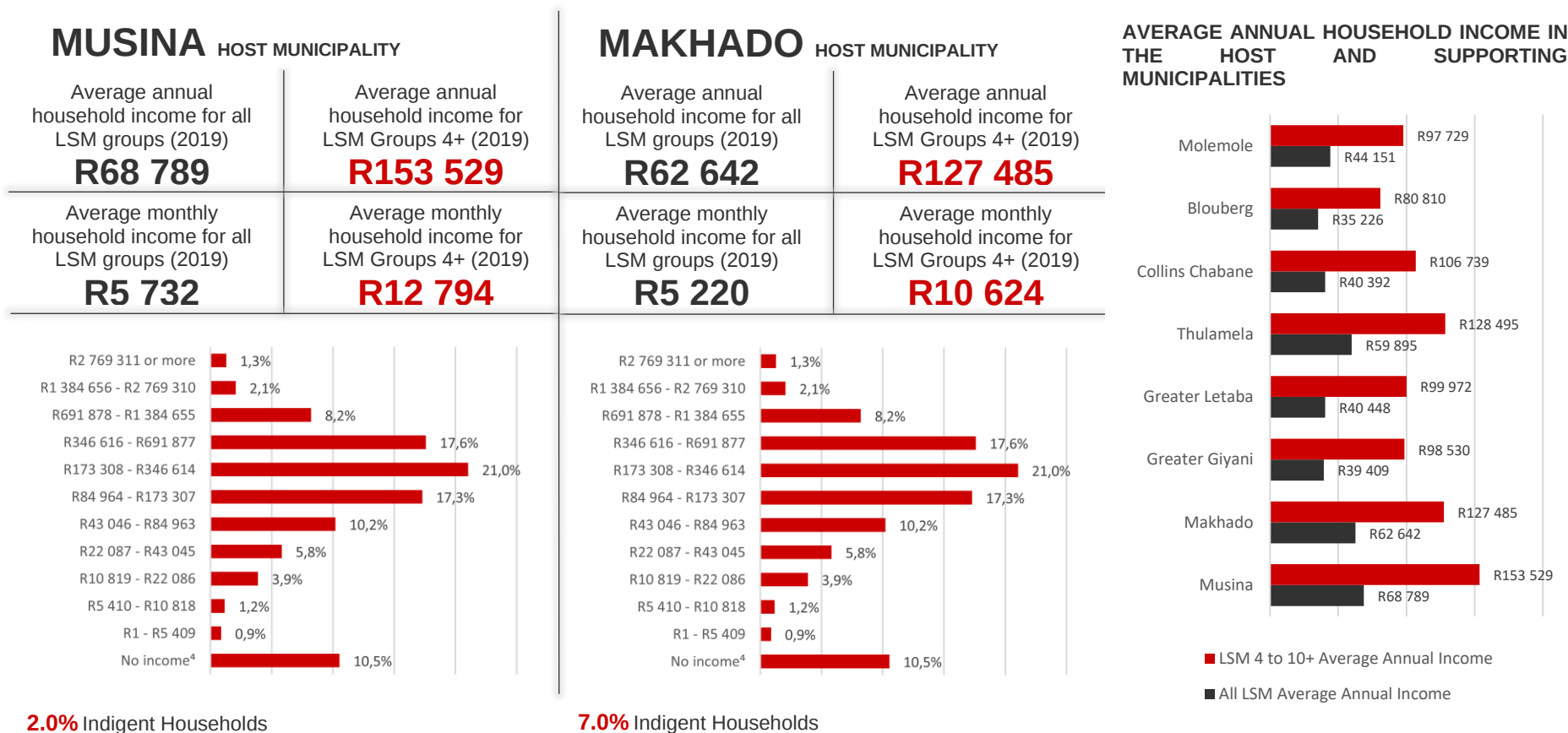


6.11 AVERAGE ANNUAL HOUSEHOLD INCOME

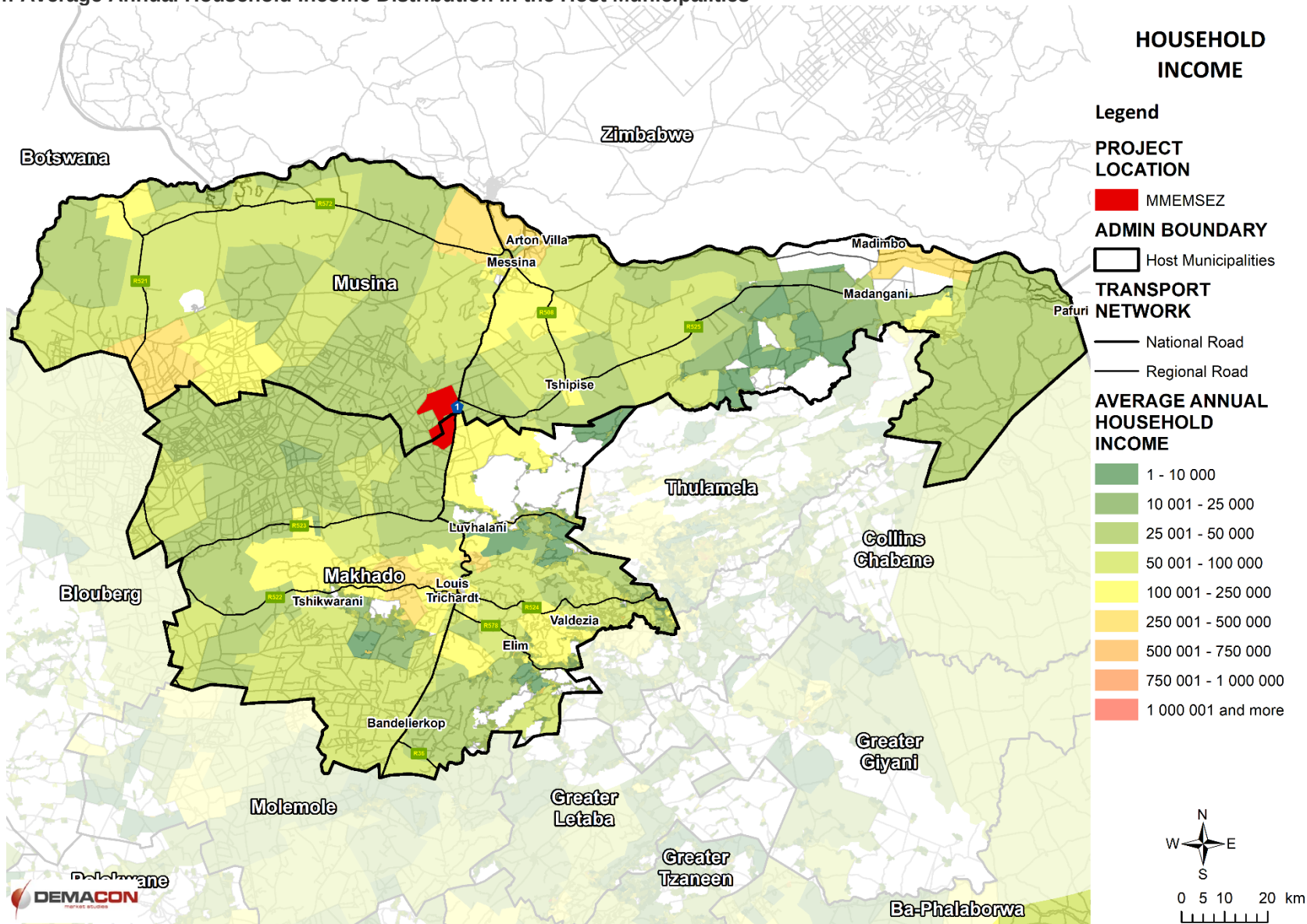
The average annual income of households within a defined geographic region provides an indication of the level to which living standards can be achieved. In essence, the ability to generate income allows households to build disposable income, which in turn is used to purchase goods and services, service debts or invest in property or other non-consumable items.

The following figure provides an indication of the average annual household income for host and supporting municipalities. It should be noted that census based household income in urban localities, and especially township markets, are generally understated and does not account for the powerful effects of informal sector activity (informal trade, backyard rentals, township business) as well as remittances.

Figure 6.7: Average Annual Household Income for Host and Supporting Municipalities



Map 6.4: Average Annual Household Income Distribution in the Host Municipalities



Source: DEMACON GIS, 2019

6.12 LIVING STANDARD MEASUREMENT

The LSM index is an instrument designed to profile a market in terms of a continuum of progressively more developed and sophisticated market segments. The LSM system is based on a set of marketing differentiators, which group consumers according to their standard of living, using criteria such as degree of urbanisation and ownership of assets (predominantly luxury goods).

The LSM system is a wealth measure based on standard of living, rather than income alone. The market segmentation continuum is divided into ten LSM segments, where LSM 1 signifies the lowest living standard and LSM 10+ signifies the highest living standard. The LSM categories are defined and weighted in terms of the following 29 variables (refer to Table 4.1). It is important to note that the LSM system is widely applied for marketing and branding purposes

Table 6.1: Living Standard Measurement (LSM) Variables

1	Hot running water	16	Less than 2 radio sets/household	17	Hi-Fi/music centre	25	Electricity
2	Fridge/freezer	9	Traditional hut	18	Rural outside	26	Sewing machine
3	Microwave oven	10	Washing machine	19	Built-in kitchen sink	27	DVD player
4	Flush toilet in/outside house	11	PC in home	20	Home security service	28	1 cell phone per household
5	No domestic in household	12	Electric stove	21	Deep freezer	29	Motor vehicle in household
6	VCR	13	TV set	22	Water in home/plot		
7	Vacuum cleaner/floor polisher	14	Tumble dryer	23	M-net/DSTV subscription		
8	No cell phone in household	15	Home telephone	24	Dishwasher		

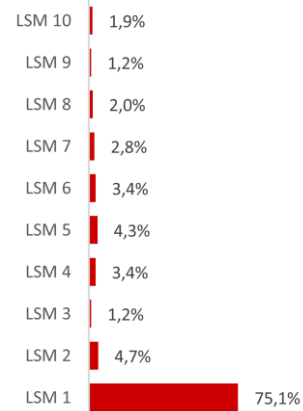
Essentially, the LSM index summarises the net result of market indicators discussed in preceding paragraphs. The objective is to assess whether minimum demand thresholds can be met by households within the market area sustaining the market potential, taking due cognisance of demand potential and effective competitive supply.

The data shows that for all host and supporting municipalities the proportion of the households that can be classified in LSM 1 to 3 segments constitute between two thirds and three quarters of households. The Musina and Makhado host municipalities proportionally have 71.2% and 68.5% of households that form part of LSM 1 to 3 segments.

The marginally section of households that form part of LSM 4 to 10+ can be attributed to the sizeable portion of households that earn a monthly income below R3 500 which in effect influences the capability of households to spend money on a wide array of goods and services.

Figure 6.8: Living Standard Measurement for Host and Supporting Municipalities

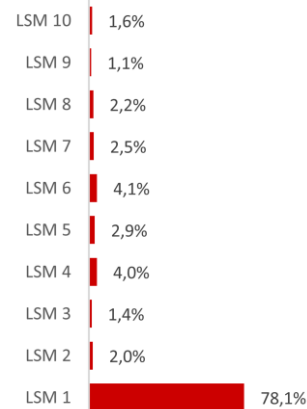
MUSINA HOST MUNICIPALITY



LSM 1 to 3
are the **most**
prevalent
group in the
Musina
Municipality

LSM 8 to 10
are the **least**
prevalent

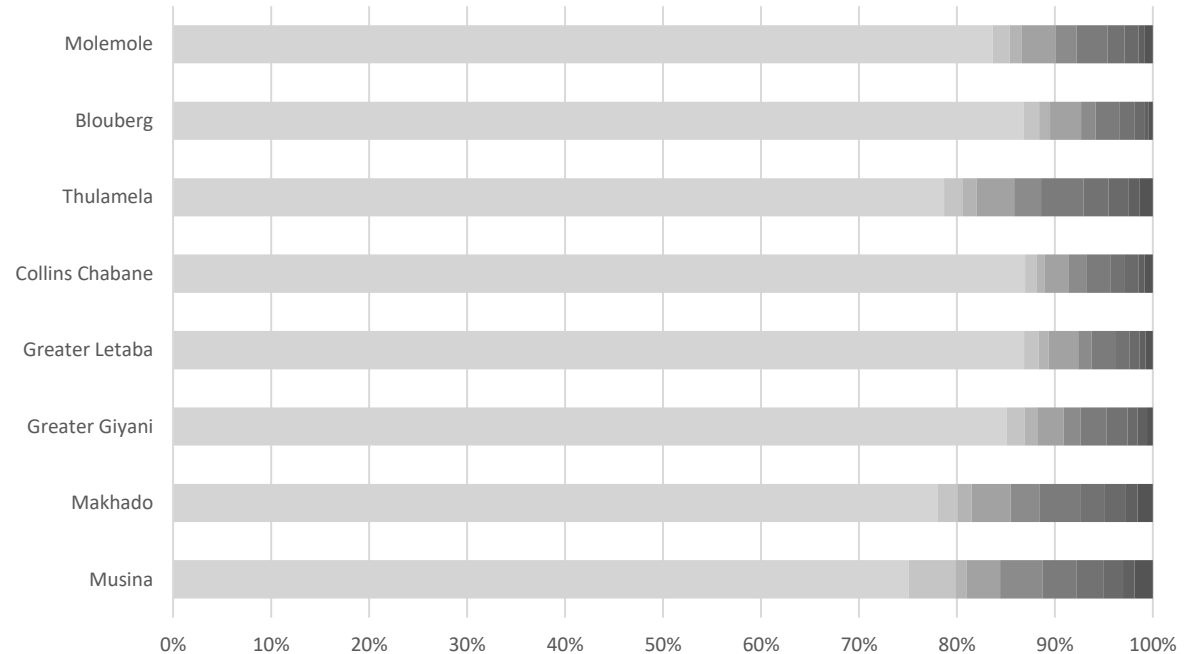
MAKHADO HOST MUNICIPALITY



LSM 1 to 3
are the **most**
prevalent
group in the
Makhado
Municipality

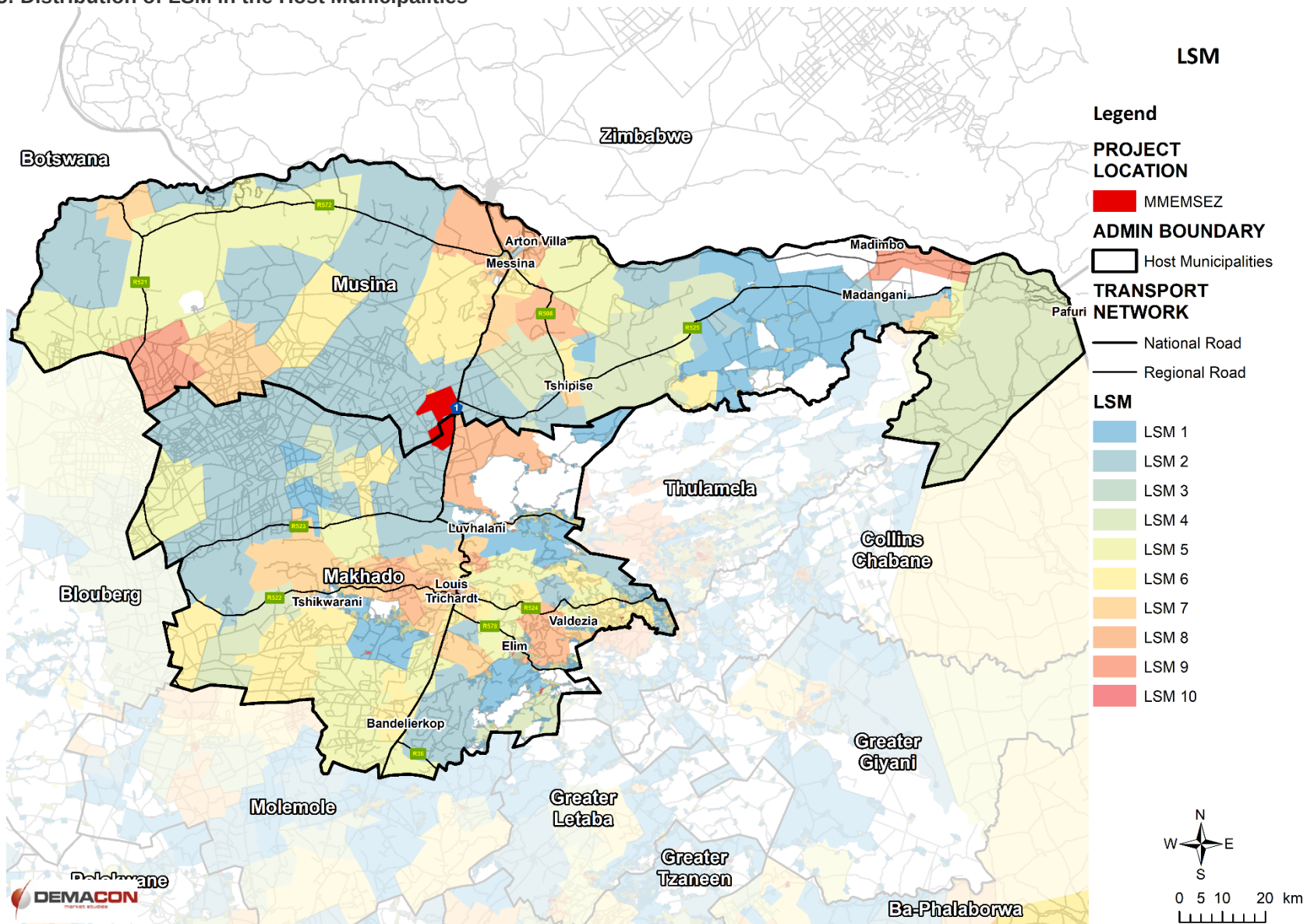
LSM 8 to 10
are the **least**
prevalent

LIVING STANDARD MEASURE IN THE HOST AND SUPPORTING MUNICIPALITIES



	Musina	Makhado	Greater Giyani	Greater Letaba	Collins Chabane	Thulamela	Blouberg	Molemole
LSM 1	75,1%	78,1%	85,1%	86,9%	87,0%	78,7%	86,8%	83,7%
LSM 2	4,7%	2,0%	1,8%	1,5%	1,2%	1,9%	1,6%	1,7%
LSM 3	1,2%	1,4%	1,3%	1,1%	0,8%	1,4%	1,1%	1,2%
LSM 4	3,4%	4,0%	2,7%	3,0%	2,4%	3,9%	3,2%	3,5%
LSM 5	4,3%	2,9%	1,7%	1,4%	1,8%	2,7%	1,5%	2,1%
LSM 6	3,4%	4,1%	2,7%	2,5%	2,4%	4,4%	2,5%	3,2%
LSM 7	2,8%	2,5%	2,1%	1,4%	1,5%	2,5%	1,5%	1,7%
LSM 8	2,0%	2,2%	1,0%	1,0%	1,4%	2,1%	1,0%	1,4%
LSM 9	1,2%	1,1%	1,0%	0,6%	0,6%	1,1%	0,4%	0,7%
LSM 10	1,9%	1,6%	0,6%	0,8%	0,8%	1,4%	0,5%	0,8%

Map 6.5: Distribution of LSM in the Host Municipalities

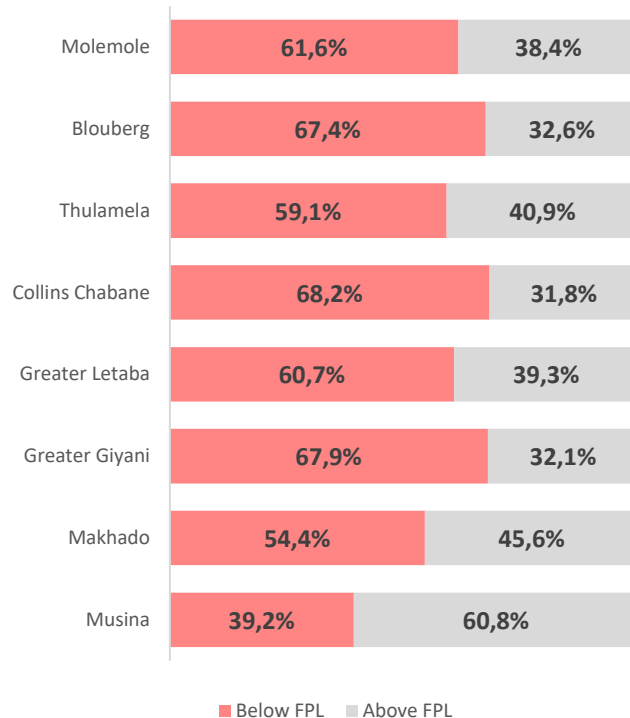


6.13 POVERTY PROFILE OF THE HOST AND SUPPORTING MUNICIPALITIES

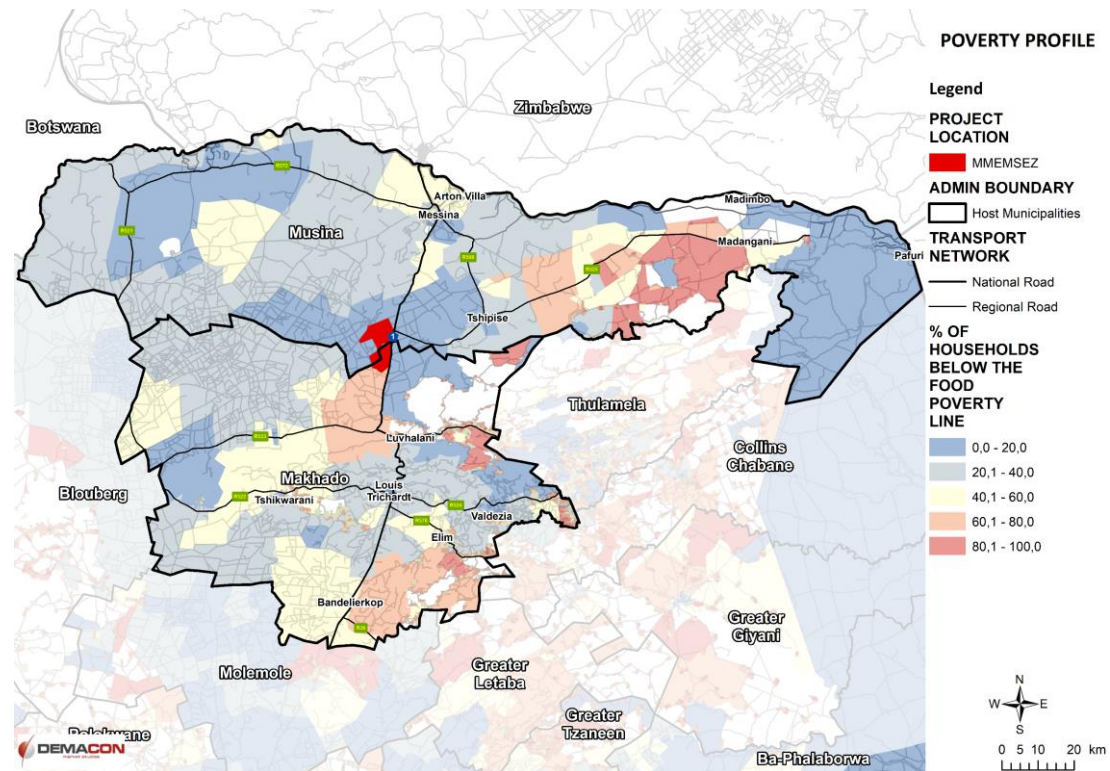
Based on information discussed, reference can be made to the approximately poverty level of households in the host and supporting municipalities. The purpose of the information is to provide a holistic overview of the context of local communities and so provide deeper understanding of the potential impact that the proposed MMEMSEZ could have on the livelihood of communities. The following information is based on the Statistics South Africa defined Food Poverty Line (FPL). The FPL can be defined as “the amount of money that an individual will need to afford the minimum required daily energy intake”. The FPL for the Limpopo Province is estimated at R517 per person per month.

Figure 6.9: Poverty Profile of the Host and Supporting Municipalities

PROPORTION OF HOUSEHOLDS IN THE HOST AND SUPPORTING MUNICIPALITIES ABOVE AND BELOW THE FOOD POVERTY LINE OF THE LIMPOPO PROVINCE



Map 6.6: Poverty Profile of the Host and Supporting Municipalities



6.14 BURDEN OF DISEASE PROFILE OF THE HOST AND SUPPORTING MUNICIPALITIES

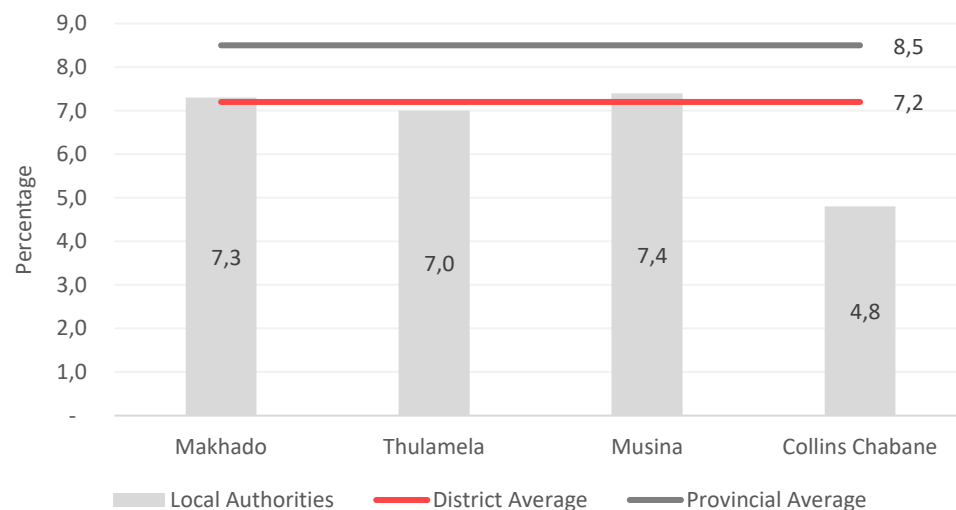
Burden of disease data represents information which highlights the extent to which the leading causes of pre-mature death in health districts across South Africa can be reviewed. According to the District Health Barometer (2019/20) the proportions of deaths and years of life lost (YLLs) due to four broad cause groups (Communicable diseases, HIV-related and TB, Non-communicable diseases, and injuries) were calculated for each of the 52 districts. 'Years of life lost' is a measure of premature mortality based on the age at death and thus highlights the causes of death that should be targeted for prevention. In line with the second South African NBD study, the West level 26 model life expectancy was selected as the standard against which YLLs are calculated. The proportion of all deaths that are amenable to healthcare were also calculated for each district.

Figure 6.10: Percentage of Deaths by Broad and Leading Cause – 2012 to 2017

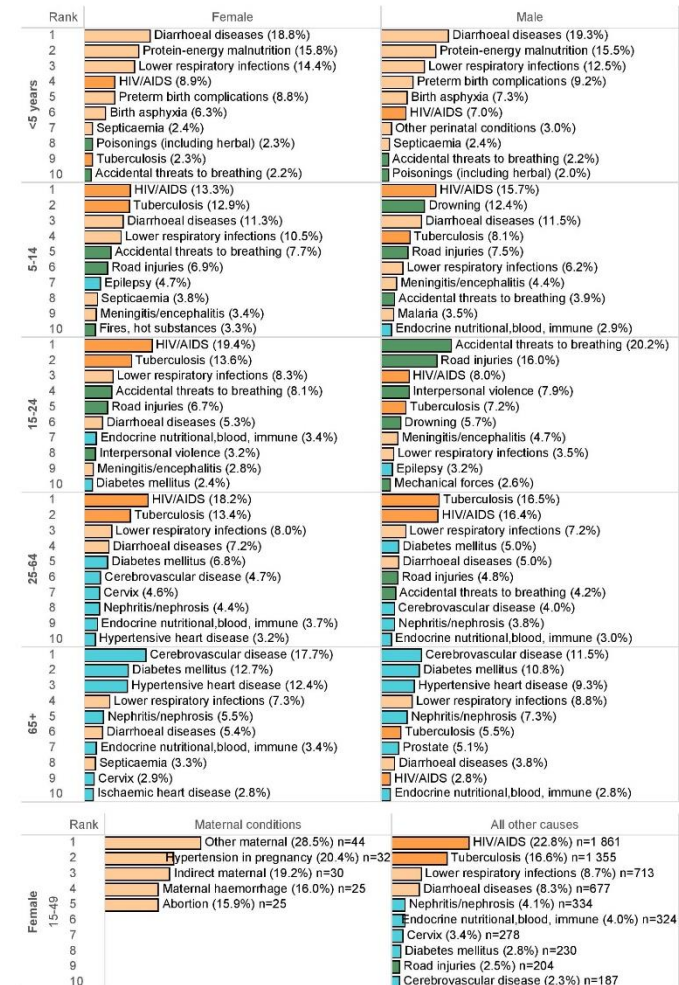


Source: DEMACON ex DHB, 2020

Figure 6.11: Average Percentage of People Covered by Medical Insurance



Source: DEMACON ex DHB, 2020



6.15 DISCUSSION

POPULATION AND HOUSEHOLDS

The data shows that the host municipalities combined have nearly 674 000 people and 204 000 households residing within their borders. The Musina Local Municipality is the smaller of the two host municipalities with a total of 114 690 people compared to the 558 890 people residing in the Makhado Local Municipality. Additionally, the Musina Local Municipality also contributes a smaller proportion of households to the project area, 44 945 households in 2019 compared to the 158 555 households in the Makhado Local Municipality.

When considering bordering local municipalities (supporting municipalities), the total number of people residing within the boundaries of the supporting municipalities amount to nearly 1.8 million people and slightly less than 500 000 households. The most populous of the supporting municipalities is the Thulamela Local Municipality which is home to 682 896 people and 183 286 households. The second most populous supporting municipality is the newly demarcated Collins Chabane Local Municipality which is home to 361 150 people and 97 526 households.

At a national level the average household size has historically been steadily decreasing. In line with national trends, all host and supporting municipalities have experienced a continuous decrease in average household size. Exceptions include the Blouberg and Molemole supporting municipalities which have experienced no change in average household size since 2011.

In relation to the size of population and households, the spatial distribution of population and households within the host municipalities is also of significance as the spatial congregation of population may provide valuable information regarding the clustering and locational preference of people.

In order to show the spatial distribution and size of population, the following maps show the distribution and density of population throughout the host municipalities, and the size of population associated per different localities throughout the host municipalities.

AGE PROFILE

The age profiles for the host municipalities show a proportionally large share in the 0 to 39 male and female age groups. The age profile of the Musina host municipality is typical of a mining area whereby younger age groups migrate to the area for work purposes and older age groups are steadily employed. In comparison the Makhado host municipality age profile shows a young growing population profile typical of areas undergoing moderate to high population growth due to economic opportunities.

HIGHEST LEVEL OF EDUCATION

The data above shows that in all host and supporting municipalities a significant portion of the population aged 20 years and older have not attained any form of formal schooling. In the Musina host municipality more than 17% of the 20+ years of age population have not attained any form of schooling as appose to the Makhado host municipality where nearly 20% of the 20+ years of age segment have not attained any schooling.

For all municipalities a marginal proportion of the population have completed a matric certificate or any form of higher education. Less than 15% of the 20+ years of age segment have completed a matric certificate in the host municipalities respectively, compared to roughly 5% of the population that have attained higher education.

EMPLOYMENT, OCCUPATION AND SKILLS PROFILE

The data shows that in both host and supporting municipalities semi-skilled and low-skilled occupations are the most prominent amongst the 80.1% and 64.4% of economically active persons employed in the Musina and Makhado host municipalities respectively. Proportionally, semi-skilled occupations are the most prominent with on average more than 41% of employed persons employed in occupations such as service and market sales workers and craft and related occupations.

The skilled section of the labour force on average accommodates more than 22% of the labour force in professional and clerking positions.

Low-skilled occupations on average accommodates more than 36% of employees. Manufacturing labourers make-up on average 2.3% of occupations in the host and supporting municipalities. The limited manufacturing labour force would be increased through employment by the SEZ, but could also indicate that a mismatch or lack of skills exist in the host and supporting municipalities to service the SEZ labour requirements.

The Musina host municipality has the lowest unemployment rate of all host and supporting municipalities (19.9%). The Makhado host municipality has one of the highest unemployment rates – in excess of 35% of economically active population groups. Supporting municipalities also report significantly high unemployment rates – typically between 30% and 50%.

The Musina and Makhado host municipalities have the highest labour absorption rates of all municipalities considered (i.e. 55.6% and 30% respectively). Although the Thulamela supporting municipalities shows the highest rate of new job creation per year (in excess of 600 jobs per annum), the labour absorption rate is below 25% of the potentially economically active population.

All host and supporting municipalities show a under supply of employment opportunity growth in comparison to the rate of growth of the economically active segment of the population. The Blouberg and Molemole supporting municipalities indicate a nett average annual loss of economically active population and employment opportunities. The information indicates that job-seekers are migrating out of the municipalities to areas where employment opportunities could be obtained.

DWELLING TYPES

The data above shows that a formal house or brick structure on a separate stand is proportionally the dominant housing typology for all host and supporting municipalities. It should be noted that the Musina and Makhado host municipalities have, in comparison to supporting municipalities, a lower proportional share of formal house or brick structures.

The host municipalities do, however, have proportionally high shares of traditional, house / flat / room in backyard, informal dwellings in backyard

and formal room flatlet dwellings. The typology of the host municipalities is largely as a result of traditional authorities in the host municipality geographic regions and the prominence of backyard rental structures (formal and informal).

TENURE STATUS

The data above shows that in the Musina host municipality property is primarily rented from private individuals or the property in which a household resides is owned and the bond fully paid. The Makhado host municipality data shows that more than 70% of households own the property on which they reside and have fully paid the bond for the property. A sizeable portion of households occupy the dwelling in which they reside rent-free. Rent-free occupation is typically associated with informal settlements and backyard dwellings where friends and family members occupy secondary dwellings at no cost.

When considering supporting municipalities, households primarily own the property on which they reside and have fully paid the bond associated with the property. The rental market in supporting municipalities is limited as a marginal portion of households rent their property from private or public institutions.

AVERAGE ANNUAL HOUSEHOLD INCOME

The data above shows for all municipalities between 11% and 15% of households obtain no annual income from any sources. Similarly, for all municipalities, households that earn between R1 and R3 500 on average represents more than 60% of households per local municipality. Households that earn more than R3 500 per month on average represents only 20% of households per local municipality.

For the Musina and Makhado host municipalities, 12.7% and 11.6% of households respectively earn no annual income, while households that earn between R1 and R3 500 represent 66.4% and 66.0% of households. The remaining 20.9% and 22.4% of households in the Musina and Makhado host municipalities earn an annual income above R3 500. When compared to supporting municipalities a correlation can be observed in the similarity of

household income distribution. The sizeable share of households that earn less than R3 500 per month provides an indication of the low buying power available to local communities and could indicate that the local economy primarily consists of low paying employment opportunities.

Aside from the distribution of households per income categories, the average household income of local communities in the host and supporting municipalities can be viewed in relation to a weighted average annual income. The weighted income provides an indication of the average annual and monthly income of all households as well as households that fall within the LSM 4 to 10+ segment.

The data shows that compared to supporting municipalities, households in the host municipalities on average earn higher annual and monthly incomes. The host municipalities average annual income for all LSM segments ranges between R60 000 and R70 000 compared to supporting municipalities where average annual household incomes range between R40 000 and R60 000.

When considering households within the LSM 4 to 10+ segments the host municipalities maintain average annual household income above those earned by households in supporting municipalities. The Thulamela supporting municipality is the only municipality where households earn annual incomes comparative to those of the host municipalities.

Average annual household income in the host municipalities range between R125 000 and R155 000 per annum whilst average annual incomes for households in the supporting municipalities range between R80 000 and R128 000.

POVERTY LINE

The poverty line in this instance refers to the minimum amount of money required per person per household per month to sustain the lowest threshold of calories required to survive.

The indicator is used to provide an overview of households that cannot meet this requirement and in effect have limited to no purchasing power. The

information can be viewed alongside the average annual household income and LSM information as indicators to deduce the relative capability of households in the host and supporting municipalities to sustain livelihoods.

On average between 30% and 55% of households in the host municipalities live below the food poverty line. Likewise in supporting municipalities, on average between 60% and 70% of households live below the food poverty line.

The information indicates that more than half of households in all municipalities are unable to purchase sufficient quantities of food. The average annual household income as well as LSM profiles indicate that households typically earn between R5 000 and R6 000 per month and are primarily categorised as LSM 1 to 3. The information thus indicates that households have limited buying power and that money earned by households are generally spent on an array of other items and services (i.e. transport, accommodation, servicing debts, etc.)

BURDEN OF DISEASE

The burden of disease indicates the degree to which population within the host municipalities (specifically the Vhembe District) are influenced by a range of health-related impacts. The data shows the distribution of deaths per the primary cause. The information provides an indicative platform upon which key health aspects and focus areas can be identified.

Burden of disease data for the Vhembe District identifies that:

- ✓ Age groups younger than 5 years
 - The leading cause of death for the age cohort is characterised by communicable diseases that exclude HIV and TB and maternal, perinatal and nutritional disorders (71% of deaths).
 - Leading causes include diarrhoeal diseases, protein-energy malnutrition and lower respiratory infections.
- ✓ Age groups 5 to 14 years
 - The leading cause of death for the age cohort is characterised by communicable diseases that exclude HIV and TB and maternal,

perinatal and nutritional disorders (71% of deaths) and HIV-related and TB (24%).

- Leading cases include HIV/AIDS (13 to 15%), Tuberculosis (8 to 13%) and Diarrhoeal diseases (11% to 12%).

✓ Age groups 15 to 24 years

- The leading cause of death for females are HIV-related and TB causes (31% of deaths. The leading cause of death amongst males in the age cohort are as a result of injuries (54% of deaths).
- Females within the age cohort are primarily affected by HIV/AIDS and Tuberculosis, whilst males are primarily affected by Accidental Threats to Breathing and Road Injuries.

✓ Age groups 25 to 64 years

- The leading cause of death within the age cohort includes non-communicable diseases (36% to 42%) and HIV-related and TB (32% to 33%) causes.
- Male and female population within the age cohort are primarily affected by HIV/AIDS (16% to 18%), Tuberculosis (13% to 16%) and lower respiratory infections (7% to 8%). Diabetes is the primary on-communicable disease affecting the age cohort.

✓ Age groups 65 and older

- The leading cause for death in the age cohort is non-communicable diseases (72% to 77%).
- Leading cases affecting population in the age group include cerebrovascular disease (11% to 17%), diabetes (10% to 12%) and hypertension heart disease (9% to 12%).

The preceding data indicates that HIV/AIDS and TB play a considerable role in the health and well-being of people between the ages of 25 and 64. The effect of the diseases on younger age groups is also apparent. Age groups 24 and older also heavily influenced by non-communicable diseases, especially diabetes and cerebrovascular disease (affects arteries supplying blood to the brain).

The lack of protein and resulting diarrhoea is a key cause of death amongst younger age groups, especially children younger than 5 years of age. The lack of sufficient nutritional and protein related illnesses can be attributed to low livelihood standards in the host communities – considering the sizeable

proportion of households that earn no income and that form part of households living below the minimum living level (food poverty line).

It should also be considered that, on average, approximately 8.5% of people in the Limpopo Province have access to a medical aid scheme. When considering the Vhembe District, the average proportion of people falls well below that provincial average (7.2%). The Musina and Makhado host communities on average have between 7.3% and 7.4% of people who are medically insured. The medical insurance deficit places a significant burden on public sector healthcare, and the capability of the healthcare system to lower the burden of disease.

The Covid-19 pandemic has further influenced the healthcare system of the country, the population and its day-to-day status quo, as well as the economy's prospects and operations. In light of the burden of disease, the virus does pose a significant risk in terms of community transmissions, the capability of local healthcare systems, demand for related social amenities and the capability of local communities to earn a living given current economic conditions and lockdown regulations. The pandemic could, depending on the duration of the virus's influence on society, vaccine distribution and related social and economic responses, influence the demand for healthcare facilities. The implementation of the proposed MMSEZ could require strict adherence to community safety guidelines to minimize the transmission and effects of the virus should the virus still be a primary health concern when the project starts implementation.

6.16 SYNTHESIS

The following provides a concise overview of Chapter 5 in order to outline the key salient characteristics and trends of the Musina and Makhado host municipalities.



POPULATION AND HOUSEHOLDS

- ✓ The Musina Local Municipality is the smaller of the two host municipalities with a total of 114 690 people compared to the 558 890 people residing in the Makhado Local Municipality.

- ✓ the Musina Local Municipality also contributes a smaller proportion of households to the project area, 44 945 households in 2019 compared to the 158 555 households in the Makhado Local Municipality.



AGE PROFILE

- ✓ The age profile of the Musina host municipality is typical of a mining area whereby younger age groups migrate to the area for work purposes and older age groups are steadily employed.
- ✓ The Makhado host municipality age profile shows a young growing population profile typical of areas undergoing moderate to high population growth due to economic opportunities.



HIGHEST LEVEL OF EDUCATION

- ✓ In all host and supporting municipalities a significant portion of the population aged 20 years and older have not attained any form of formal schooling.
- ✓ A marginal proportion of the population have completed a matric certificate or any form of higher education.



DWELLING TYPES

- ✓ Formal houses or brick structures on separate stands are proportionally the dominant housing typology for host and supporting municipalities.
- ✓ The host municipalities do, however, have proportionally high shares of traditional, house / flat / room in backyard, informal dwellings in backyard and formal room flatlet dwellings.



TENURE STATUS

- ✓ In the Musina host municipality property is primarily rented from private individuals or the property in which a household resides is owned and the bond fully paid.
- ✓ The Makhado host municipality data shows that the majority of households own the property on which they reside and have fully paid the bond for the property.



AVERAGE ANNUAL HOUSEHOLD INCOME

- ✓ Average annual household income for all LSM groups in the host municipalities are:
 - Musina host municipality
 - Annual: R68 789
 - Monthly: R5 732
 - Makhado host municipality
 - Annual: R62 642
 - Monthly: R5 220
- ✓ Average annual household income for LSM 4 to 10+ groups in the host municipalities are:
 - Musina host municipality
 - Annual: R153 529
 - Monthly: R12 794
 - Makhado host municipality
 - Annual: R127 485
 - Monthly: R10 624



LIVING STANDARD MEASUREMENT

- ✓ Households in the LSM 1 to 3 categories are the most prominent in both host and supporting municipalities. Proportionally, households in the LSM 1 to 3 range make up more than 80% of households.



POVERTY PROFILE

- ✓ On average 30% to 55% of households in the Musina and Makhado host municipalities live below the food poverty line.
- ✓ On average 60% to 70% of households in supporting municipalities live below the food poverty line.



BURDEN OF DISEASE

- ✓ The burden of disease profile of the host communities show that different age cohorts are affected differently by primary causes of death.
- ✓ Younger age groups, especially children between the ages of 0 and 14 are affected by communicable diseases that exclude HIV and TB and maternal, perinatal and nutritional disorders. The diseases are primarily as a result of nutritional deficiencies, respiratory illnesses and diarrheal related diseases.
- ✓ Age groups younger than 64 are influenced by HIV/AIDS and TB related illnesses. Older generations tend show a higher prevalence of non-communicable diseases. An identifier amongst younger male population is the risk of death due to injury.
- ✓ Age groups older than 64 are primarily affected by non-communicable diseases, especially diabetes, hypertension and diseases affecting blood flow to the brain.

- ✓ The Covid-19 pandemic, depending on its duration and continued influence on society could require strict measures to ensure that transmission during implementation of the project is minimized. The possibility of increased demand for healthcare services could impact on the quality and capability of local healthcare providers to address healthcare related issues.
- ✓ Data suggests that communities in the Limpopo Province, Vhembe District and host communities have limited access to healthcare insurance. Data shows that less than 8% of people in the Vhembe District have access to a medical aid. The data suggests a high dependence on public healthcare systems.

An aerial photograph of an industrial complex, possibly a refinery or chemical plant, featuring various storage tanks, processing units, and piping. A large, bold red number '7' is superimposed on the right side of the image. The text 'SOCIO-ECONOMIC IMPACT ASSESSMENT' is written in bold red capital letters on the left side.

SOCIO-ECONOMIC IMPACT ASSESSMENT

7 SOCIO-ECONOMIC IMPACT ASSESSMENT

7.1 INTRODUCTION

Chapter 7 of the report is focused on providing details regarding the potential socio-economic impact that the proposed MMEMSEZ could have on the local and regional economy as well as communities residing in the host and supporting municipalities. The economic impact analysis is based on measuring impacts from a quantitative and qualitative perspective.

Quantitative analysis focuses on determining economic relationships between the construction and operational phases of a specific project within the broader economy and how monetary flows could be impacted on due to the presence of a new economic input.

Qualitative analysis will more directly focus on the impact of construction and operational phase impacts by measuring identified impacts based on an index that stipulates the significance of the impact factor and outlines a detailed description and mitigation measure where necessary.

The differentiation in impact approaches allows for diverse and robust impact analysis that considers a variety of impact factors on the basis of, not only **measurable outputs**, but **decision-making matrixes** that associate and link quantitative research with qualitative outcomes.

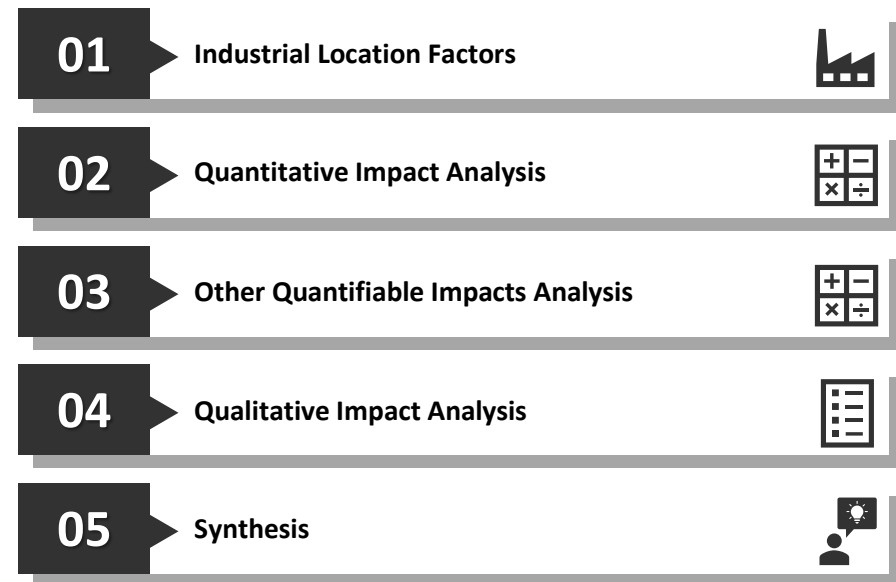
In order to functionally consider the socio-economic impact of the proposed SEZ, due consideration must be given to the background and proposals associated with the SEZ. The background as well as detailed description of proposed operations, supporting industries and services, as well as output, expected outputs and employment requirements are outlined in Chapter 2 of the report. Where necessary, reference is made to the detailed information and statistics outlined in Chapter 2.

The remainder of the Chapter is focused on:

- ✓ an analysis of the industrial location factors that influence the choice, functionality and sustainability of industrial development,

- ✓ a quantitative analysis of the impact of the construction and operational phase of the MMEMSEZ,
- ✓ an analysis of other quantifiable impacts, and
- ✓ a qualitative analysis of the impact of the construction and operational phase of the MMEMSEZ.

The following sections provide a concise overview of the socio-economic impact assessment in terms of:



7.2 INDUSTRIAL LOCATION FACTORS AND BUILDING BLOCKS

In the context of the MMEMSEZ it is necessary to consider the factors that could influence the sustainability of the development as well as locational factors that should be considered when establishing an industrial related development.

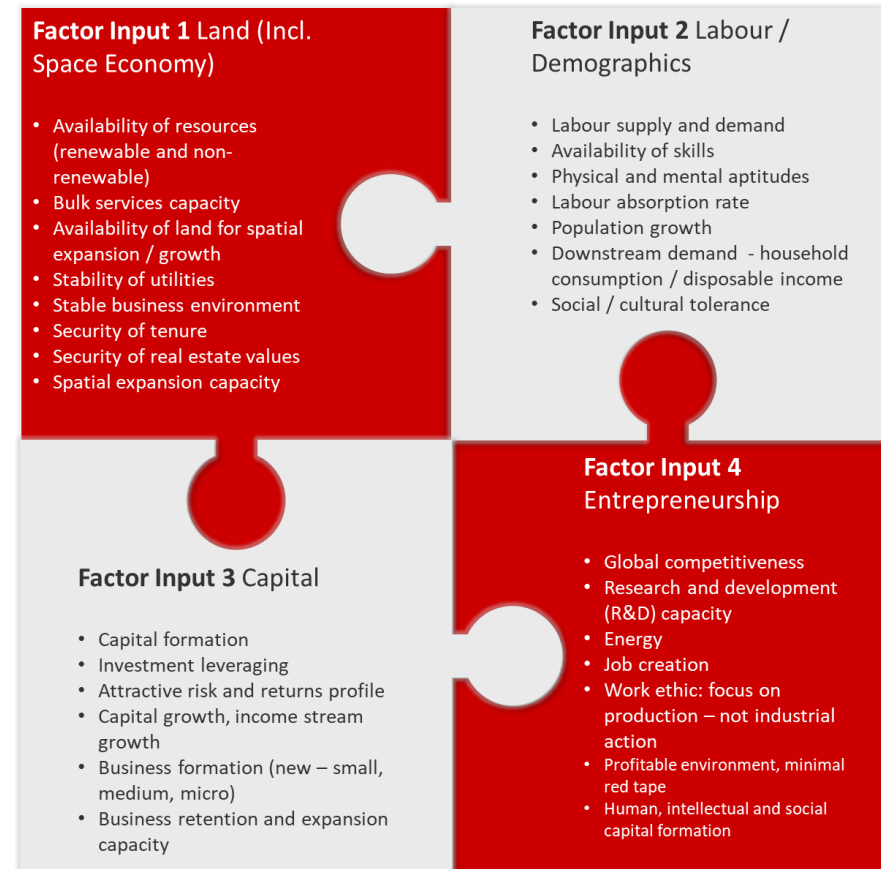
When considering the sustainability of an industrial development, four key factors are essential inputs to ensure the long-term viability of a project. The factors relate to multiple elements across hard and soft infrastructure requirements and social and economic inputs that support and grow industrial activities.

The building blocks for sustainable development include:

- ✓ **Land and the space economy**
 - considering the availability of resources and bulk infrastructure, the potential to expand proposed operations in the future, the extent and stability of not only the business environment but the supply of utilities and property markets.
- ✓ **Labour and demographic profiles**
 - considering the availability of labour and the extent to which the local labour force has sufficient skills to support proposed operations, the degree to which local demographic trends change and shape the local community profile and the livelihoods of local communities.
- ✓ **Capital investment**
 - considering the potential for capital formation through operations and the leveraging of investment, the effectiveness of operations to sustain capital growth and encourage local value chain development, and the expansion capacity of the local economy to accommodate new businesses.
- ✓ **Entrepreneurship growth**
 - considering the local and international competitiveness of the national economy and local operations, the potential to ensure job creation and labour force work ethic and the growth of human capital through social investment.

The following diagram provides a graphic representation of the key factor inputs for sustainable development.

Diagram 7.1: Building Blocks for Sustainable Development



Source: DEMACON, 2019

In addition to considering the sustainability factors necessary to ensure long-term viability of a project, other factors can also be reviewed. The sustainable building blocks consider the local and broader economic, social, spatial and financial elements, but location factors specific to the context of industrial development are important to identify industrial activities that are located in different socio-economic and spatial localities.

Industrial location factors can be reviewed based on two variables, the first being traditional and the second contemporary.

Traditional location factors consider the positioning of an industrial development in regard to its proximity to resources, accessibility to markets, the potential to agglomerate and the availability of logistical infrastructure.

Contemporary location factors consider the availability of utilities and the easy and stability of accessing these services, the proximity of industry to secondary functions, the availability and proximity of industry to labour resources and the availability of financial incentives.

The following provides an overview and description of industrial location factors.

Table 7.1: Summary and Description of Industrial Location Factors

Economic Base	Description
Traditional Industrial Location Factors	
Resources	Proximity to natural resources and natural resources as the primary product.
Market	Natural resources are processed (beneficiated) to create final and intermediate products.
Agglomeration	Products created as a result of input from different industries located within proximity to each other (clustering industrial activities).
Logistics	Activity located based on its demand for logistics as its primary consideration – connectivity and movement dependent.
Contemporary Location Factors	
Electricity (Utility) Orientation	Industry's location based on the accessibility of utilities such as water and electricity.
Amenity Orientation	Industry's location based on its secondary function – adding value to quality of life, research and development, etc.
Labour	Cheap, reliable or stable labour
Incentives	Financial incentives.

Source: DEMACON, 2019

Based on the information above it becomes apparent that the MEMSEZ is traditionally positioned in regard to:

- ✓ its proximity to **natural resources** whereby many of the input resources required to operate the SEZ are primarily found in the northern mining belt,
- ✓ the potential to create an **agglomerated economic node** through the development of multiple supportive metallurgical activities within the SEZ, and
- ✓ the **proximity to major logistical routes** and inland border trade areas such as the N1 highway, Beitbridge and Pont Drift Border Posts and the railway line between Beitbridge and Gauteng and Nelspruit / Matsulu.

The SEZ is also contemporarily positioned in regard to:

- ✓ its **amenity orientation** whereby the SEZ could generate significant changes to the quality of life of local communities in the Musina and Makhado area,
- ✓ the **availability of labour** is prominent but could be influenced by mismatched labour force skills, and
- ✓ the **financial incentive** proposition of the SEZ additionally assists with the attractiveness of the SEZ.

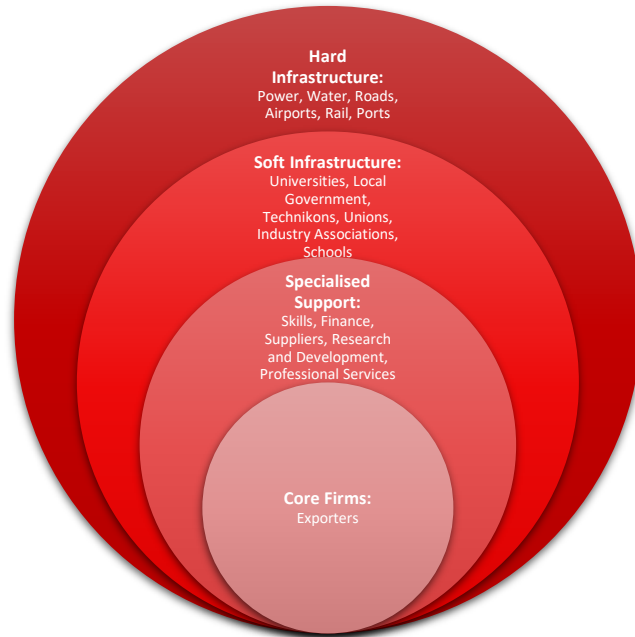
The positioning of the MEMSEZ as a metallurgical cluster also provides significant benefits but, in order to be successful a number of key elements such as infrastructure and support structures are required.

In order to become a successful metallurgical cluster, the following elements are required:

- ✓ Core firms,
- ✓ Specialised support,
- ✓ Soft infrastructure, and
- ✓ Hard infrastructure.

The following diagram provides an overview of a successful cluster composition.

Diagram 7.2: Composition of a Successful Cluster



Source: DEMACON, 2019

7.3 QUANTITATIVE IMPACT ASSESSMENT

The following section is focused on providing an indication of the potential economic impacts (direct, indirect and induced) that could result from the construction and operational phase of the MMEMSEZ.

The section firstly focuses on identification of the multiplier effect that the MMEMSEZ could have as a result of construction and operational activities. The section then focusses on identification of the input variables that define the baseline from which quantitative impacts are derived, and lastly illustrates the potential impact that could be generated.

7.3.1 DEFINING ECONOMIC IMPACT AND THE MULTIPLIER EFFECT

The input-output model depicts economic relationships between different components of an economy by identifying monetary flows (expenditures,

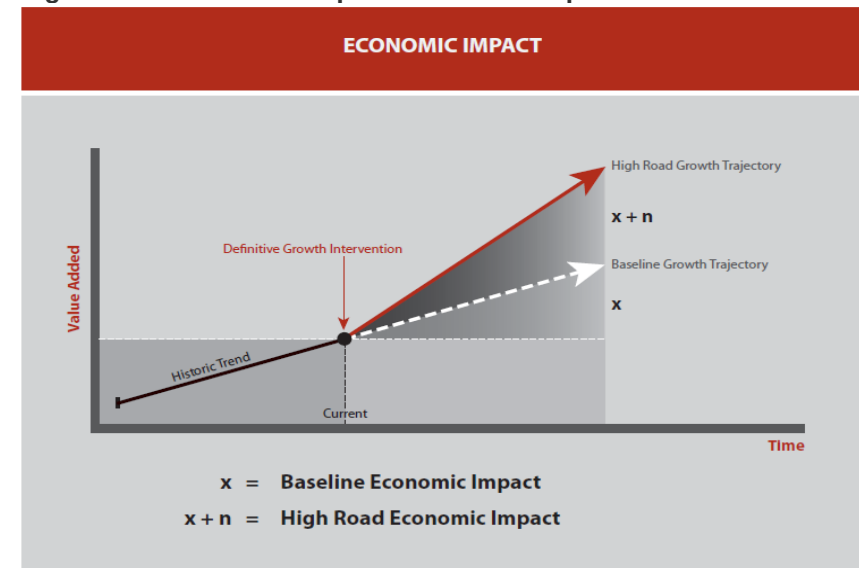
receipts) between various units. The relationship between the initial spending and the total effects generated by the spending is known as the multiplier effect ($X + N$) of a sector, or more generally as the impact of a sector on the economy as a whole.

Impacts are measured in terms of the following:

- ✓ **Business sales** refers to the value of business sales (turnover) generated in the economy as a result of the mine.
- ✓ **GGP** refers to the value of all final goods and services produced during a one-year period within the boundaries of a specific area as a result of the mine.
- ✓ **Total employment** reflects the number of additional jobs created by economic growth due to the mine. Note that the public costs of attracting these employment opportunities, as well as the quality thereof, are not necessarily reflected.

The following diagram conceptually illustrates the economic impact that the proposed MMEMSEZ has on the wider economy in terms of additional GGP.

Diagram 7.3: Economic Impact of the Development



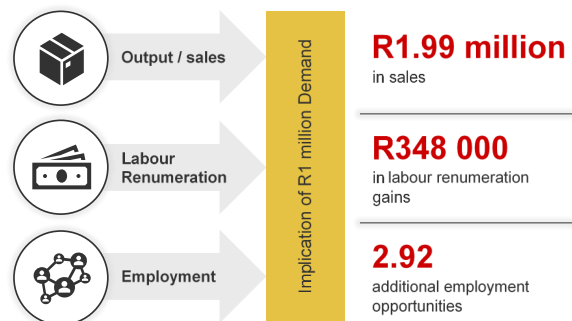
Source: DEMACON, 2019

The impact result due to a change in output is measured through national multipliers. The multiplier effect refers to the increase in final income arising from any new injection of demand and the opposite is also true with a withdrawal of demand will lead to a downward multiplier effect. The following is evident for manufacturing of iron and steel products within the Limpopo Province.

- ✓ **Output/Sales:** For every R1 million in final demand from metallurgical production there is R1.99 million downstream variation in output/sales generated across the entire economy.
- ✓ **Labour Remuneration:** Salaries and wages within the metallurgical manufacturing sector are on average higher than those in the non-ferrous manufacturing sectors. As a result, the economy wide impact is higher as workers earn more and can spend more money on goods and services than those in other non-ferrous production sectors. For every R1 million variation in final demand, labour remuneration either loses or gains R348 000.
- ✓ **Employment:** A total of 3 employment opportunities are created within the formal and informal sectors across the entire economy due to a R1 million variation in metallurgical demand. The reverse is also true, with a loss in 3 employment opportunities across the economy if there is a R1 million decrease in metallurgical demand.

To summarise the multiplier effect of a metallurgical cluster on the economy, the following diagram is provided.

Diagram 7.4: Multiplier Effect of a Metallurgical Manufacturing Industry



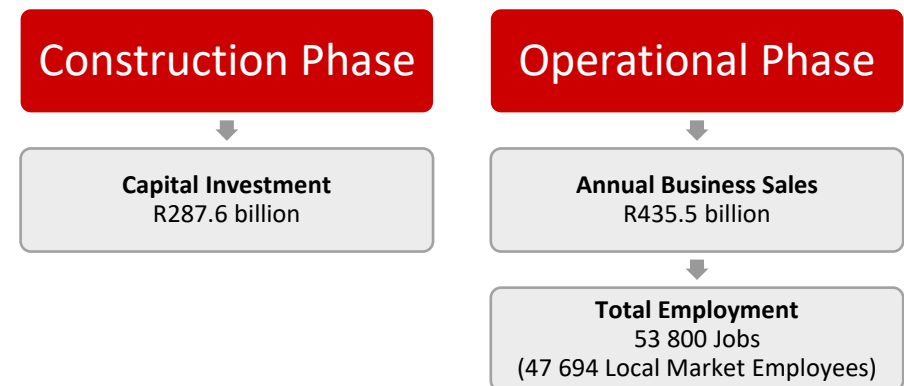
Source: DEMACON ex Quantec South Africa (South African Reserve Bank), 2019

7.3.2 DEFINING CONSTRUCTION AND OPERATIONAL PHASE INPUT VARIABLES

The following is focused on defining the key input variables to the quantitative impact model. In order to fully understand the context within which the economic multiplier influences economy wide impacts, the core input variables (i.e. construction phase capital investment and potential monetary output from operations of the SEZ) must be defined.

The following provides an overview of the construction phase capital investment and operational phase business sales value.

Diagram 7.5: Construction and Operational Phase Quantitative Impact Input Variables



Source: DEMACON ex IX Engineers and MCC – Internal Master Planning, 2019

It is evident from Diagram 7.5 that a **capital investment amount of R287.6 billion** could be injected to implement the MEMSEZ. The diagram further illustrates that annual business sales of the MEMSEZ could achieve **R435.5 billion** and that a total of **53 800 jobs** (47 694 employees sourced from the local market) could be created at full operational capacity.

It should be noted that the capital investment and annual business sales values are expressed in US Dollar format. A Rand value is calculated by making use of an annual average US Dollar / South African Rand exchange rate between August 2018 and August 2019. The US Dollar / South African Rand exchange rate used is **R14.29**.

7.3.3 CONSTRUCTION AND OPERATIONAL PHASE IMPACTS

Based on previous information, the following provides an overview of the potential socio-economic impacts (direct, indirect and induced) that could result from the construction and operation of the MMEMSEZ. The analysis firstly provides an indication of the input variables and assumptions. It is important to note that construction phase impacts are **once-off** and not sustained annual impacts as appose to operational phase impacts that are **sustained annual impacts** as a result of the full operation / maturity of the project.

Figure 7.1: Quantitative Socio- Economic Impact During Construction and Operational Phase of the MMEMSEZ

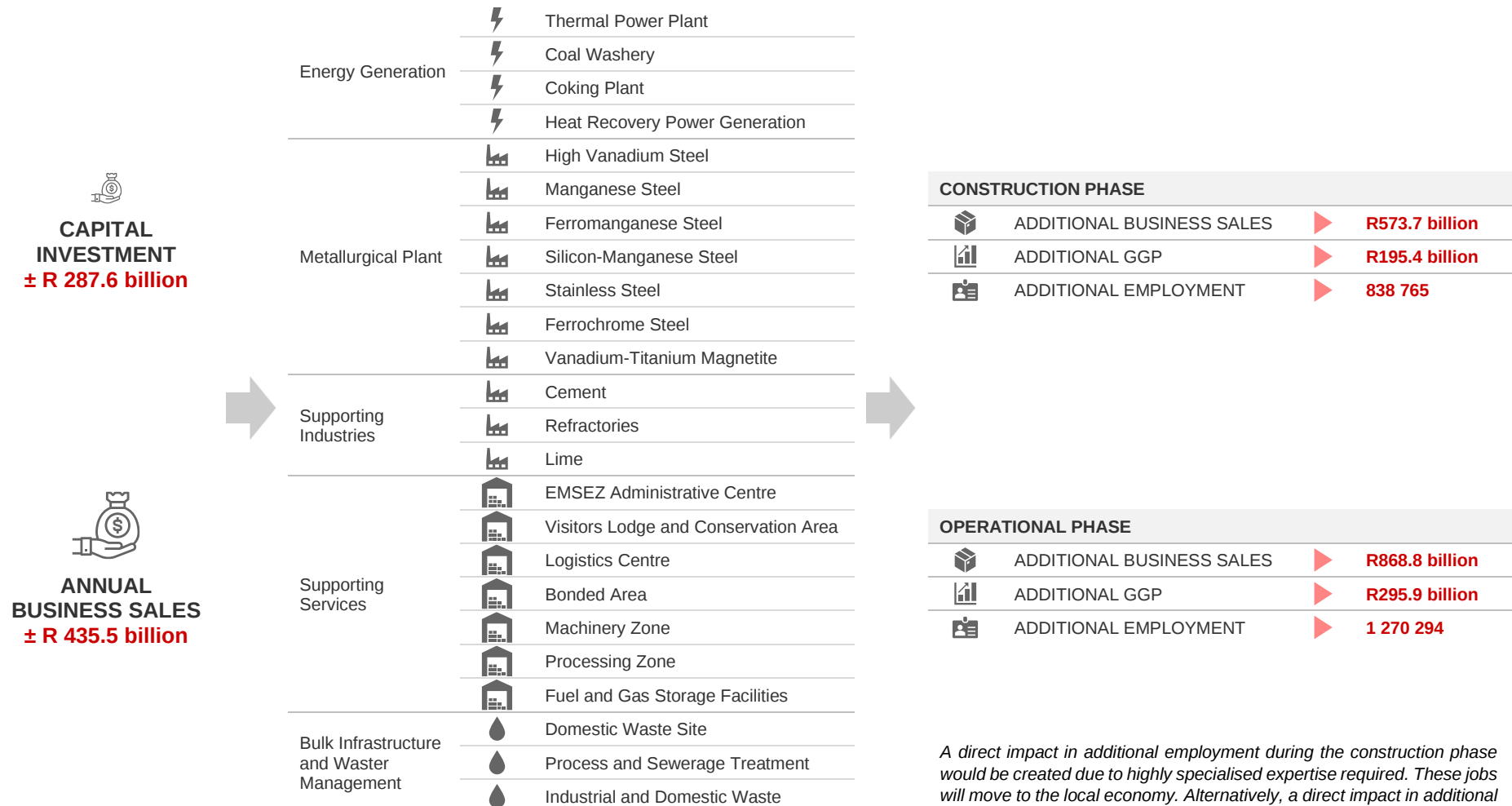
CONSTRUCTION PHASE IMPACTS					OPERATIONAL PHASE IMPACTS				
 CAPITAL INVESTMENT ± R 287.6 billion					 ANNUAL BUSINESS SALES ± R 435.5 billion				
 ADDITIONAL BUSINESS SALES					 ADDITIONAL BUSINESS SALES				
 Direct Impact R411,4 billion	 Indirect Impact R61,9 billion	 Induced Impact R100,4 billion	 Total Impact R573,7 billion		 Direct Impact R623,1 billion	 Indirect Impact R93,7 billion	 Induced Impact R152,0 billion	 Total Impact R868,8 billion	
 ADDITIONAL GGP					 ADDITIONAL GGP				
 Direct Impact R124,0 billion	 Indirect Impact R26,8 billion	 Induced Impact R44,6 billion	 Total Impact R195,4 billion		 Direct Impact R187,8 billion	 Indirect Impact R40,5 billion	 Induced Impact R67,5 billion	 Total Impact R295,9 billion	
 ADDITIONAL EMPLOYMENT					 ADDITIONAL EMPLOYMENT				
 Direct Impact 492 651 jobs	 Indirect Impact 107 011 jobs	 Induced Impact 239 103 jobs	 Total Impact 838 765 jobs		 Direct Impact 746 111 jobs	 Indirect Impact 162 066 jobs	 Induced Impact 362 117 jobs	 Total Impact 1 270 294 jobs	

Source: DEMACON Market Studies Quantitative Impact Model, 2019

TOTAL IMPACT OF THE CONSTRUCTION AND OPERATIONAL PHASES

The following illustrates that the total capital expenditure during the construction phase and operational phase could create the following impacts, which includes direct, indirect and induced effects.

Figure 7.2: Total Socio-Economic Impact during the Construction and Operational Phase of the MMEMSEZ



Source: DEMACON Economic Impact Model, 2019

Note: The economy wide impact includes the direct, indirect and induced impacts

A direct impact in additional employment during the construction phase would be created due to highly specialised expertise required. These jobs will move to the local economy. Alternatively, a direct impact in additional employment created during the operational phase due to the increased employment opportunities created in the down-stream market value chain.

7.4 OTHER QUANTITATIVE IMPACT ANALYSIS

Based on the extent and size of the MMEMSEZ, the range of impacts that could be generated by the SEZ is expansive. As a result, a number of key impacts have been identified that should be considered alongside the quantitative impact of the initial investment and operation of the SEZ.

Other quantifiable impacts that have been identified for analysis include:

- ✓ The impact of direct employment created by the SEZ on the tax revenue of South Africa, and
- ✓ The impact of the SEZ on the local tourism industry.

The range of impacts identified for further analysis are discussed in greater detail by the following sections.

7.4.1 MMEMSEZ EMPLOYEES IMPACT ON INCOME TAX REVENUE

The direct employment generated by the MMEMSEZ (i.e. 53 800 jobs) could have a substantial impact on the additional revenue generated by the South African Revenue Service (SARS) through taxes on employee remuneration.

The following section seeks to identify the extent of the impact that could be generated through employee remuneration taxation (i.e. Pay as You Earn – PAYE and Unemployment Insurance Fund - UIF).

In order to determine the potential impact that could be generated, the following assumptions have been applied:

- ✓ Assumed monthly employee income per employment type:
 - Executive positions – R25 000 per month
 - Professional positions – R15 000 per month
 - General labour positions – R8 000 per month.
- ✓ The SARS taxation brackets of the 2019/20 financial year have been applied, and
- ✓ The calculation does not consider non-taxable benefits that employees may be afforded.

The following provides an indication of the potential PAYE and UIF revenue that could be generated by employees of the MMEMSEZ if employees were employed in 2019.

Table 7.2: Estimated Impact of MMEMSEZ Employee Income Tax Revenue

	Executive Positions	Professional Positions	General Labour Positions
Employee Structure			
Number of Employees	6 994	4 842	41 964
Employee Remuneration			
Gross Monthly Remuneration (per Employee)	R25 000.00	R15 000.00	R8 000.00
Gross Monthly Remuneration (All Employees)	R174 850 000	R72 630 000	R335 712 000
Personal Income Tax			
PAYE (per Employee)	R4 009.33	R1 515.00	R255.00
UIF (per Employee)	R148.72	R148.72	R80.00
Total Monthly Personal Income Tax (per Employee)	R4 158.05	R1 663.72	R335.00
Total Tax Contribution			
Total PAYE (Annual)	R336 495 048	R88 027 560	R128 409 840
Total UIF (Annual)	R12 481 772	R8 641 227	R40 285 440
Total Income Tax Revenue (Annual)	R348 976 820	R96 668 787	R168 695 280
Total Income Tax All Employees (Annual)			R614 340 887

Source: DEMACON Market Studies, 2019

Table 7.2 shows that, when considering the assumptions stated previously, the total employee remuneration income tax that could be generated amounts to **R614.3 million**.

Approximately **R552.9 million** income tax could be generated by MMEMSEZ employees through PAYE taxation, whilst **R61.4 million** could be generated through the Unemployment Insurance Fund (UIF) taxation.

7.4.2 IMPACT OF THE MMEMSEZ ON THE LOCAL TOURISM INDUSTRY

The MMEMSEZ is situated in the bushveld region of South Africa which is largely known for game farm and hunting tourism, lodges and safaris and resorts.

The immediate area (i.e. 30 km radius from the SEZ) is primarily rural in nature, dominated by farms and wilderness areas. The inclusion of a heavy industrial node the scale of the MMEMSEZ impacts on the natural environment and by extension tourism activities.

Tourism facilities located close to the MMEMSEZ (i.e. ± 30 km radius) consist of hunting and game lodges, game safaris, guesthouses and resorts (outlined in the table below). Approximately 7 tourist facilities can be found in close proximity to the SEZ.

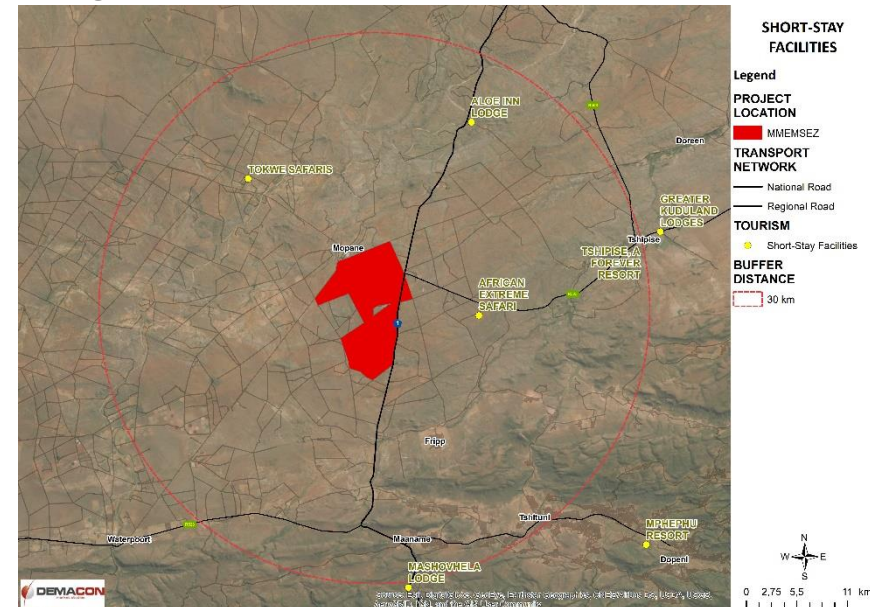
Table 7.3: Short-Stay Accommodation Within a 30 km Radius of the MMEMSEZ

Tourist Facility Name	Facility Type	Number of Beds
African Extreme Safari	Safari Lodge	9
Aloe Inn Lodge	Lodge	5
Greater Kuduland Lodges	Lodge	11
Mashovhela Lodge	Lodge	11
The Ultimate Guesthouse	Guesthouse	16
Tokwe Safaris	Safari Lodge	7
Tshipise, A Forever Resort	Resort	471
Total Beds		530

Source: DEMACON Market Studies ex GoLimpopo, 2019

Table 7.3 and map 7.1 show that approximately 530 beds are available for short-stay accommodation in the immediate surrounds of the MMEMSEZ.

Map 7.1: Distribution of Tourist Facilities in a ± 30 km Radius of the MMEMSEZ



Source: DEMACON GIS, 2019

The Domestic Tourism Survey (2018) identifies a number of key facts about tourist activity in the Limpopo Province:

- ✓ **82.9%** of tourists travelling to the Limpopo Province reside within the province for up to 1 week,
- ✓ **LSM 8 to 10 groups are more likely to reside longer in the province** than LSM 1 to 4 groups,
- ✓ The majority of tourists travelling to the Limpopo Province originate from the Gauteng Province (**84.7%**),
- ✓ **$\pm 20\,000$ overnight trips** are made to the Limpopo Province for leisure, holiday or vacation purposes (i.e. overnight trips with a stay of between 1 to 7 nights).
- ✓ On average tourist facilities in the province make approximately **R1 152 income per night of stay**.

When considering the information provided as well as assuming that tourist facilities within a ± 30 km radius of the MMEMSEZ have a 100% occupancy

rate per month and only domestic tourists are taken into consideration, tourist facilities have the potential to generate in excess of **R56.86 million per year** (excluding deductions etc.).

Additionally, the tourism industry as a whole in the Musina and Makhado Host Municipalities can be reviewed in terms of the catering and accommodation sector and the GVA output of the sector. the following table illustrates key information regarding the sector for the host municipalities.

Table 7.4: Catering and Accommodation Sector Size and Contribution to the Host Municipalities Economic Output

Item	Musina Local Municipality	Makhado Local Municipality
Catering and Accommodation Sector GVA (R/million Current Prices)	R74.98	R194.96
Average Annual Growth Rate	2.7%	0.6%
Contribution to Total Economic Output	1.4%	0.9%

Source: DEMACON Market Studies ex StatsSA, 2019

Table 7.4 shows that in total, the catering and accommodation sectors contribute **R269.9 million** to the economies of the host municipalities. The sector can be viewed as a marginal role-player in the broader extent of the economy, but the sector shows continued positive growth since 2008.

By considering the information discussed, it becomes apparent that the tourism industry in the immediate vicinity of the MMEMSEZ and broader host municipality economy is a continually growing and sustainable industry.

The inclusion of the MMEMSEZ within the natural environment could influence the desirability of leisure tourists to visit local establishments – especially establishments in close proximity to the MMEMSEZ.

Although leisure tourists may be negatively affected by the MMEMSEZ, business tourism may increase. Overnight business trips to the Limpopo Province are limited whilst day trips represent 3.97% of all day trips. Thus, due to the business environment of the SEZ, trips to and from the SEZ may increase from not only domestic but foreign business tourists.

Revenue potential from leisure tourists would be diminished even though business tourism may supplement some of the revenue lost – business tourists typically have shorter number of bed nights as appose to leisure tourists.

7.5 QUALITATIVE IMPACT ASSESSMENT

The following section is focused on outlining the qualitative impact assessment of the MMEMSEZ. The purpose of this assessment is to:

- ✓ **outline potential impacts** that may arise from the project's implementation during the construction and operational phase,
- ✓ **assess the identified impacts based on a scientific methodology** in order to outline the extent, scale, magnitude, probability and significance of each impact, and
- ✓ **to identify potential mitigation measures** that can be implemented to minimize the severity of negative impacts and encourage greater output from positive impacts.

The section outlines key considerations with regard to the socio-economic impacts associated with special economic zones and the potential spill-over effects derived from SEZ's. the information serves as a basis to understanding the potential effects that SEZ's have on local communities, the economy and value-chains.

Lastly the section outlines the identified potential impacts associated with the construction and operational phases of the SEZ. The section outlines potential mitigation measures to ensure that impacts generate positive outcomes to the local community and economy.

7.5.1 SOCIO-ECONOMIC IMPACT CONSIDERATIONS

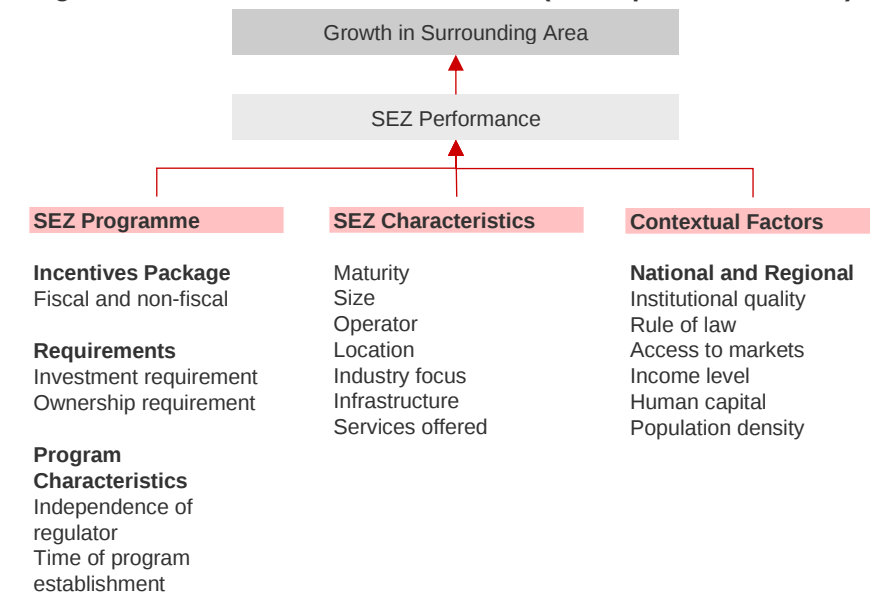
SPECIAL ECONOMIC ZONE PERFORMANCE AND SPILL-OVER EFFECTS

The purpose of SEZ's provide a clear and concise directive for stimulating economic growth across numerous platforms and systems. Although SEZ's offer opportune environment within which to function and thrive, various factors influence the performance of SEZ's to achieve intended outcomes.

According to the Competitive Industries and Innovation Program³ the drivers of SEZ performance is multi-faceted and cannot be considered inside a vacuum. The success of an SEZ is influenced not only by the operational activities within the SEZ, but also by external factors in the local operating environment, regional and national economies, policy environments and global trends.

The following provides an overview of assumed influential factors that impact on the success of SEZ's.

Diagram 7.6: Drivers of SEZ Performance (Conceptual Framework)



Source: DEMACON ex World Bank, 2019

The **SEZ programme** refers to the set-up and design of SEZ programmes and the extent which the programme is beneficial to both the investor and local economy. The extent to which incentives and requirements for operations and investment contribute to fluid construction and operations

are essential in allowing the SEZ to establish and mature. Other factors such as the political climate in which the SEZ programme was devised can influence perceptions and investment potential as well.

The **characteristics** of an SEZ, meaning the age of operations, the operator in charge of the SEZ, location in the local and broader national geography, economic industry on which the SEZ operation focus, availability and quality of infrastructure, the size and layout of the SEZ and accessibility to local and external markets, influence not only the extent to which investment is promised, but the operational efficiency of participants. In essence, the contextual economic focus coupled with inner workings and day-to-day activities impact on the perception of return on investment of participants and the willingness to invest in such a scheme.

Lastly the **contextual factors** related to political and administrative functions of a country and the availability and context of potential job seekers and surrounding communities are essential. The potential of local human capital markets and the potential of human capital to contribute and function as part of proposed operations influence the outlook on productivity and willingness to participate.

The study undertaken by the World bank has shown that local and national context matter when considering success factors. It is generally found that the dynamism of a country's economy correlates to the dynamics of an SEZ whereby SEZ's generally do not diversify outside the context of the broader national economy's diversity.

It was also found that SEZ's typically located in poorer communities with ease of access to a major/national node or urban centre prosper due to connectivity to dynamic markets. Countries that have shown industrialisation also tend to provide a better platform for SEZ's to thrive.

Research also noted that in developing country's incentive packages such as type of operator; tax exemptions; or sundry subsidies largely do not influence the success of zones.

³ World Bank, Special Economic Zones: An Operational Review of Their Impacts, 2017

Spill over effects of an SEZ do provide influence in local communities by means of economic prosperity and opportunities. It has been found that, generally the zone of influence for an SEZ becomes nominal at a 50 km radius.

Additionally, the establishment of new knowledge zones, meaning the generation of knowledge specific to the operations of an SEZ, can be problematic if these knowledge zones do not already exist.

Knowledge spill-over from an SEZ does not necessarily extend beyond the SEZ's local sphere of influence and so cannot be viewed to extensively contribute to knowledge and skills development within the national context.

Key outcomes to note of the World Bank study:

- ✓ Older and well-established SEZ's tend to grow at a slower average annual economic pace than newly established or young SEZ's,
- ✓ Over time SEZs become more established and lose to a large extent economic dynamism which impacts on the long-term economic performance which steadily declines and requires interventions,
- ✓ SEZ economic performance directly correlates with the physical size of an SEZ operational area which influences growth potential,
- ✓ SEZ's located further away from the main economic nodes of a country tend to influence the dynamism of the SEZ thus impacting on the agglomeration and inter-connectivity of markets and economic drivers.
- ✓ In emerging economies, data analysis shows that SEZ with a low technology component is more successful than highly technology driven SEZ's.
- ✓ The nature of SEZ operators (public or private) do not have a significant influence on investment. A dependency is formed with the broader policy and political context of a country which in turn influences operators.

IMPACT OF SPECIAL ECONOMIC ZONES IN SOUTH AFRICA

The implementation of special economic zones in South Africa is directed towards industrial agglomeration and cluster development by means of

attracting both domestic and foreign direct investment. The establishment of SEZ's also function as a decentralisation tool for industrial development in order to limit the overburdening of existing developed industrial regions of the country.

Additionally, SEZ's provide a basis for industrial upgrades and technology advancement to spur local production capabilities and broaden existing value chains beyond the existing manufacturing value chain.

According to the SEZ Advisory Board⁴, the proper implementation of SEZ's could unlock the country's economic fortunes over the medium to long-term by:

- ✓ Increasing the flow of domestic and foreign direct investment,
- ✓ Develop, strengthen and deepen key domestic value chains, and
- ✓ Increase the volume and diversity of exports.

The potential diversification and attraction of investment to SEZ's in South Africa can be reviewed by means of the distribution of investment by entities per industrial sector in SEZ's.

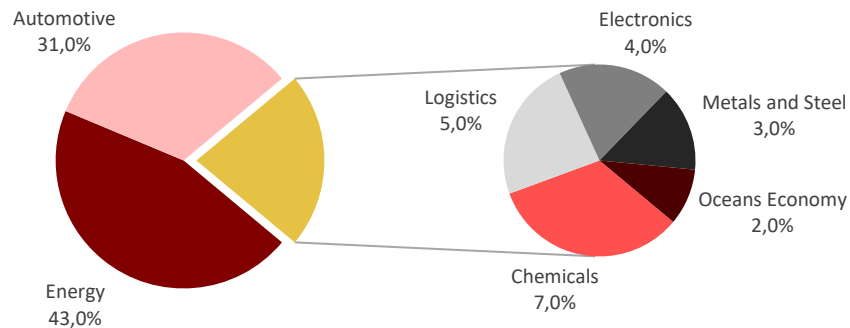
The data shows that investment is primarily concentrated in the automotive and energy sectors of SEZ's. Investment into other industrial sectors such as logistics, electronics and metals and steel are limited but do allow for continued diversification of product offerings.

Apart from the diversification of industrial activity in South Africa, SEZ's have also generated sizable contributions to employment in the country. Since inception of the IDZ programme 71 966 employment opportunities have been generated by SEZ's.

Approximately 14% of employment opportunities are direct impacts meaning that SEZ's employ more than 9 700 workers while 86% of employment opportunities have been generated indirectly by means of construction undertakings and the provision of other services.

⁴ SEZ Advisory Board Special Report, 2017

Figure 7.3: Proportional Distribution of Investment into Special Economic Zones per Industrial Sector (2015/16)



Source: DEMACON ex SEZ Advisory Board, 2019

7.5.2 QUALITATIVE IMPACT ASSESSMENT METHODOLOGY

The evaluation of impacts is conducted in terms of the criteria detailed in Table 7.4 to Table 7.10. The various socio-economic impacts and benefits of this project is discussed in terms of the status, extent, duration, probability, and magnitude of the impact.

Finally, an accumulative impact and significance rating is applied to rate each identified impact in terms of its overall magnitude and significance (Table 7.11 and 7.12).

In order to adequately assess and evaluate the impacts and benefits associated with the project it was necessary to develop a methodology that would scientifically achieve this and reduce the subjectivity involved in making such evaluations.

For informed decision making it is necessary to assess all legal requirements and clearly defined criteria in order to accurately determine the significance of the predicted impact or benefit on the surrounding social environment.

The nature or status of the impact is determined by the conditions of the environment prior to construction and operation. A discussion on the status of the impact will include a description of what causes the effect, what will be affected and how it will be affected. The status of the impact can be described as negative, positive or neutral.

The following provides an outline and overview of the methodological elements described above. The outline and overview forms part of the overall qualitative impact assessment and is compiled into a singular feature which outlines the identified impact, its assessment based on the methodological elements and potential mitigation measures that can be considered.

Table 7.5: Status of the Impact

DESCRIPTION	RATING	QUANTITATIVE RATING
A benefit to the environment	Positive	+
No cost or benefit to the environment	Neutral	N
A cost to the environment.	Negative	—

Table 7.6: Extent of the Impact

DESCRIPTION	RATING	QUANTITATIVE RATING
Site Specific; Occurs within the site boundary.	Low	①
Local; Extends beyond the site boundary; extending only as far as local community or urban area	Medium - Low	②
Provincial / Regional; Extends far beyond the site boundary; Widespread effect	Medium	③
National i.e. South Africa	Medium - High	④

Across International Borders	Very High	⑤
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Table 7.7: Duration of the Impact

DESCRIPTION	RATING	QUANTITATIVE RATING
Immediate (less than a year)	Low	①
Short term (1-5 years)	Medium - Low	②
Medium term (6-15 years)	Medium	③
Long term (the impact will cease after the operational life of the project)	Medium - High	④
Permanent (no mitigation measures of natural process will reduce the impact after construction)	Very High	⑤

Note: The Duration of the impact refers to the time scale of the impact or benefit

Table 7.8: Magnitude of the Impact

DESCRIPTION	RATING	QUANTITATIVE RATING
Where the aspect will have no impact on the environment	None	①
Where the impact affects the environment in such a way that neutral, cultural and social functions and processes are not affected	Low	①
Where the impact affects the environment in such a way that neutral, cultural and social functions and processes are slightly affected	Medium - Low	②

DESCRIPTION	RATING	QUANTITATIVE RATING
Where the impact affects the environment in such a way that neutral, cultural and social functions and processes continue albeit in a modified way	Medium	③
Where the impact affects the environment in such a way that neutral, cultural and social functions and processes are altered to the extent that it will temporarily cease	Medium - High	④
Where the impact affects the environment in such a way that neutral, cultural and social functions and processes are altered to the extent that it will permanently cease	Very High / Don't Know	⑤

Note: The magnitude of severity of the impact is indicated

Table 7.9: Probability of the Impact

DESCRIPTION	RATING	QUANTITATIVE RATING
Impact will not occur	None	①
The possibility of the impact materialising is low as a result of design, historic experience or implementation of adequate mitigation measures	Improbable	①
There is a possibility that the impact will occur	Low probability	②
The impact may occur	Medium Probability	③
It is expected that the impact will occur; Chance of occurrence.	Highly Probable	④
Impact will occur regardless of any prevention measures	Definite	⑤

Note: The probability of the impact describes the likelihood of the impact actually occurring

Table 7.10: Cumulative Impact

DESCRIPTION	RATING	QUANTITATIVE RATING
The net effect is the same as the single development	Negligible	①
The impact of two developments of a similar nature is less than twice the impact of a single development. This implies it is better to place the two developments in the same environment rather than in separate environments.	Marginal	②
The impact of two developments is more than twice the impact of two single developments. This implies that it is better to split the two developments into separate environments	Compounding	③

Note: The impact of the development is considered together with additional developments of the same or similar nature and magnitude

Table 7.11: Impact Significance Rating

DESCRIPTION	RATING	QUANTITATIVE RATING	IMPACT
The impact has no impact, or the impact is unknown	No Impact	0	Negligible
The impact does not have a direct influence on the decision to develop the area	Low	Up to 15	
The impact has an influence, but the impact can be mitigated	Low to Medium	16 – 30	Negative / Positive
The impact could influence the decision to develop in the area unless it is effectively mitigated	Medium	31 – 45	

DESCRIPTION	RATING	QUANTITATIVE RATING	IMPACT
The impact will have a direct influence on the decision to develop but there are means of mitigating the impact although these may be difficult as well as expensive	Medium to High	46 – 60	
Where the impact must have an influence on the decision to proceed to develop in the area	High	Above 60	

Note: The impact magnitude and significance rating are utilised to rate each identified impact in terms of its overall magnitude and significance

7.5.3 IMPACT ASSESSMENT

The qualitative impact assessment considers potential impacts generated by the MMEMSEZ during the construction and operational phase of the project.

The intent is to identify most likely socio-economic impacts, the extent, significance and magnitude of the identified impacts, and potential mitigation measures.

The qualitative socio-economic impact assessment is outlined in the following tables.

OVERVIEW OF CONSTRUCTION AND OPERATIONAL PHASE QUALITATIVE IMPACTS

The following sub-section provides a broad and concise overview of potential impacts that could arise from the MEMSEZ during the construction and operational phase. The purpose is to outline the basis and extent of potential impacts so as to guide further detailed analysis. Detailed revision and analysis of the potential impacts are discussed in subsequent sections.

The extent of potential impacts as a result of the construction and operation of the SEZ is diverse and across multiple core themes (refer to Diagram 7.7 and Figure 7.4). The core themes under which potential qualitative impacts are identified consist of:

- ✓ Impacts on the **local and/or regional economy**,
- ✓ Impacts on **local communities**,
- ✓ Impacts on the **local burden of disease**,
- ✓ Impacts on the **local labour force**,
- ✓ Impacts on the **natural environment**,
- ✓ Impacts on **local infrastructure and utility services**, and
- ✓ Impacts on the **local property market**.

Diagram 7.7: Core Themes of the Qualitative Impact Analysis



Figure 7.4, in conjunction with Diagram 7.7 provide a concise overview of qualitative impacts identified. Detailed analysis of impacts is provided in Tables 7.11 and 7.12. The outcome of the qualitative analysis has been presented, described and tested with key stakeholders during two master plan workshops held the 13th of June 2019 and the 15th to 17th of July 2019.

Figure 7.4: Summary of Construction and Operational Phase Qualitative Impacts

CONSTRUCTION PHASE IMPACTS	 Local / Regional Economy	 Labour Force	 Infrastructure and Utilities
	Increased demand for products and services from local businesses (e.g. retail, entertainment, accommodation, construction, etc)	Short- to medium-term employment opportunities (Job creation across the skills spectrum)	Increased pressure hard infrastructure (e.g. roads, electricity, etc.) – increased maintenance burden and new investment
	Opportunity to expand local businesses through production, capacity and sales (e.g. construction, manufacturing, retail, etc.) or the establishment of new businesses	Localised labour supply side constraint (in terms of quantity and quality of requisite skills)	Increased daily loads on the local transportation network to transport labour to and from the site (home to work and work to home commute)
	Local construction sector value chain limitations – supply side constraints	Local labour supply side constraints to be met through “importation” of labour	Increased pressure on soft infrastructure (e.g. social amenities and services) - increased maintenance burden and new investment
	 Local Communities	 Natural Environment	 Property Market
	Temporary increase of household income	Partial loss of areas visual appeal and amenity value, in particular for tourism and accommodation activities	Impact on local property markets, i.e. diminished amenity value and increased property value
	In-flux of employment seekers	Impact of air, noise and soil quality on existing economic activities	Increased prospect of informal settlements
	Increased risk that social ills could materialise	Introduction of industrial activities to natural environment	Increased demand for various land uses
	Relocation of affected communities	 Burden of Disease	
		Increased burden of disease	Increased pressure on local healthcare sector

OPERATIONAL PHASE IMPACTS	 Local / Regional Economy - Sustained demand for products and services from local businesses (e.g. retail, entertainment, accommodation, construction, etc) - Local businesses supply side constraints to fulfil increased demand for products and services - Opportunities to expand local business base through production, capacity, and sales (e.g. construction, manufacturing, retail, etc.) or the establishment of new businesses - Opportunity to develop backward and forward linking industries for the manufacturing sector, i.e. inputs to the manufacturing sector and sale of intermediate and final products - Diversification of the regional economy - Opportunity to attract additional foreign and domestic investment to the local economy - Linkages to national SIP projects and areas	 Labour Force - Medium-term employment opportunities (Job creation across the skills spectrum) – includes direct, indirect and induced impacts as a result of the SEZ's operation. - Localised labour supply side constraint (in terms of quantity and quality of requisite skills) - Local labour supply side constraints to be mitigated through targeted skills development of local communities - Local labour supply side constraints to be mitigated through targeted skills development of local communities	 Infrastructure and Utilities - Sustained pressure hard infrastructure (e.g. roads, electricity, etc.) – increased maintenance burden and new investment - Increased daily loads on the local transportation network to transport labour to and from the site (home to work and work to home commute)
	 Local Communities - Sustained increase of household income during the operational phase of the project - Sustained pressure on soft infrastructure (e.g. social amenities and services) - increased maintenance burden and new investment - In-flux of employment seekers - Sustained risk that social ills could materialise - Social investment by the SEZ into local communities	 Natural Environment - Partial loss of areas visual appeal and amenity value, in particular for tourism and accommodation activities - Impact of air, noise and soil quality on existing economic activities	 Property Market - Impact on local property markets, i.e. diminished amenity value and increased property value - Sustained demand for new development (i.e. residential, retail, etc.) - State revenue potential through additional rates and taxes (to address inter alia infrastructure supply and maintenance demand) - Increased prospect of informal settlements - Speculative pricing activity in nearby towns can be expected
	 Burden of Disease Increased burden of disease	Increased pressure on local healthcare sector	Increased access to improved healthcare

Source: DEMACON, 2019

QUALITATIVE CONSTRUCTION PHASE IMPACTS

Table 7.12: Qualitative Construction Phase Impacts

Impact	Impact Description	Status of Impact	Impact Significance Prior to Mitigation					Mitigation Measures	Impact Significance Post Mitigation
			Extent	Duration	Magnitude	Probability	Significance		
Increased demand for products and services from local businesses (e.g. retail, entertainment, accommodation, construction, etc)	An increase in people and companies engaged with construction during the construction phase may increase the demand for goods and services from local businesses. The increase in demand may increase localised economic output for the duration of the construction period as a result of more goods and services sold.	+	②	②	③	⑤	35 Medium	Ensure that procurement from local businesses are prioritised during the construction phase in order to enhance local economic development.	Medium-High
Local construction sector value chain limitations – supply side constraints	The construction phase of the SEZ requires inputs in the form of materials, equipment, labour, etc. The local construction industry value chain may be limited in the supply of materials, equipment, labour etc, i.e. the local construction industry may have supply side constraints. Procurement of inputs necessary to complete the construction phase may have to be sourced from beyond the local economy (example: Gauteng)	—	②	②	①	④	20 Low - Medium	Encourage value chain development between local construction industry orientated businesses and established suppliers.	Low - Medium
Opportunity to expand local businesses through production, capacity and sales (e.g. construction, manufacturing, retail, etc.) or the establishment of new businesses	Increased economic activity in the local economy during the construction phase of the SEZ could provide an opportunity to expand the local business base. The local business base could expand because of an increased need for production, capacity and sales (e.g. construction, manufacturing, retail, etc.). The increased demand could also generate the opportunity to establish new businesses.	+	③	②	④	⑤	45 Medium	Ensure that procurement from local businesses are prioritised during the construction phase in order to enhance local economic development.	High

Impact	Impact Description	Status of Impact	Impact Significance Prior to Mitigation					Mitigation Measures	Impact Significance Post Mitigation
			Extent	Duration	Magnitude	Probability	Significance		
Short- to medium-term employment opportunities (Job creation across the skills spectrum)	Construction activities would provide new employment opportunities in the local economy and in effect contribute toward household livelihoods.	+	③	②	④	⑤	45 Medium	Local labour should be prioritised for available employment opportunities. A coordination effort should be undertaken between contractors and local community representatives to ensure beneficial opportunities for local communities as well as ensure efficient construction operations.	High
Localised labour supply side constraint (in terms of quantity and quality of requisite skills)	Employment in elementary occupations such as construction in the host municipalities account for between 0.7% and 1.2% of labour thus indicating that a potential mismatch may exist between local labour and SEZ construction requirements.	—	②	②	③	④	28 Low - Medium	In order to prevent a mismatch of skills during the construction phase could focus on creating programmes that undertake either: ✓ Generic skills training, ✓ Targeted training in specific skills, ✓ Targeted training for specific skills shortages, or ✓ Training in firm-specific skills in/by companies Pro-active skills mismatch prevention could focus on training of employed and unemployed persons through skills development programmes targeting specific sectors at TVET and other colleges.	Low - Medium
Local labour supply side constraints to be met through "importation" of labour	Due to a localised labour supply side constraint during the construction phase, the temporary import of several levels of skilled labour to the area to complete construction activities may be required	—	②	②	④	③	24 Low - Medium	In order to prevent the import of labour due to insufficient skills in the local labour force, focus should be given to skills training in the local community. Employment during the construction phase should also be focused on local procurement as far as possible. Additionally, should the import of labour from outside the current labour pool be necessary, the focus should be temporary imports until such time that the local labour force has sufficient skills to undertake construction activities.	Low

Impact	Impact Description	Status of Impact	Impact Significance Prior to Mitigation					Mitigation Measures	Impact Significance Post Mitigation
			Extent	Duration	Magnitude	Probability	Significance		
Increased pressure hard infrastructure (e.g. roads, electricity, etc.) – increased maintenance burden and new investment	The sudden increase in people, primarily contractors undertaking construction and local job seekers, would place added pressure on existing road and rail infrastructure and so increase the need for periodic maintenance and/or upgrades. The sudden increase also places added pressure on existing bulk services and so increase the need for maintenance or service provision expansion.	—	③	②	③	⑤	40 Medium	Ensure continuous maintenance of the primary transport routes and railway networks in order to provide fully functional and efficient travelling between origin locations and the SEZ. Due consideration could be given to the implementation of temporary shuttling services between contractor housing locations and the development site. The shuttling service would assist in minimizing contractor movement between origin and destination areas. Proper planning in regard to the accessing of essential services for the construction of the SEZ should be undertaken. Research into other sources of existing services should be undertaken in order to provide alternative measures for accessing services.	Low
Increased daily loads on the local transportation network to transport labour to and from the site (home to work and work to home commute)	Due to construction activities, labour is transported to and from the construction site, i.e. from home to work and vice versa. The daily movement of construction workers and related activities increases the load on the local transport network – influencing travel times and congestion.	—	②	②	③	④	28 Low - Medium	Establish working hours that would assist with mitigating local community impacts and ensure operational efficiency. Avoid heavy trucks during peak traffic hours. The provision of adequate and strategically positioned traffic warning signs. Roads used for construction purposes should be maintained. Construction movement activities should be mitigated to ensure that construction efforts do not influence surrounding property owner operations.	Low

Impact	Impact Description	Status of Impact	Impact Significance Prior to Mitigation					Mitigation Measures	Impact Significance Post Mitigation
			Extent	Duration	Magnitude	Probability	Significance		
Temporary increase of household income	Due to the availability of jobs during the construction phase, income generated by households could increase. It should be noted that the increase of household income would be temporary (i.e. short to medium term – 1 to 10 years – during the construction phase).	+	③	②	④	⑤	45 Medium	By procuring local communities for employment, a rise in household income would be created and directly affect the livelihood of local communities. The procurement of local labourers would be dependent on the availability of necessary skills.	Medium - High
Increased pressure on soft infrastructure (e.g. social amenities and services) - increased maintenance burden and new investment	Social facilities and amenities (e.g. healthcare, policing, postal services, etc) demand could be influenced by an increase of people in the area during the construction phase. This could create demand for the provision of additional facilities and amenities and therefore influence the public fiscus.	—	②	②	③	④	28 Low - Medium	Local authorities in conjunction with the SEZ should undertake appropriate studies to determine the possible extent of demand generated during the construction phase for social services. Sufficient knowledge regarding potential short-falls could allow for the implementation of additional services for accommodate short-term demand as well as function as mitigation measures for medium- to long-term demand.	Low - Medium
In-flux of employment seekers	The prospect of employment opportunities in the Musina-Makhado area would attract potential labour force participants from the broader area as well as from bordering supporting municipalities. Migrants may also originate from nearby Zimbabwe and Botswana. Cross-border migrants could consist of legal and illegal opportunity seekers and may impact on the sourcing of labour from local domestic markets due to the less expensive nature of foreign workers. In the event that labour must be sourced from outside the local area, these migrants could be viewed as temporary.	—	②	②	③	⑤	35 Medium	To mitigate the effects of large-scale in-migration to the project are, necessary planning and research should be undertaken. A local migration plan undertaken by local government and the SEZ should be done in order to project and identify the potential size of migration to the area, potential locations for settlement and the additional strain placed on the local economy, services and infrastructure. The migration plan should be done in conjunction to spatial planning policies of local government in order to ensure sustainable and efficient spatial remedies and objectives.	Medium

Impact	Impact Description	Status of Impact	Impact Significance Prior to Mitigation					Mitigation Measures	Impact Significance Post Mitigation
			Extent	Duration	Magnitude	Probability	Significance		
Relocation of affected communities	To some degree households reside within the project site and would require relocation to another area in order for construction activities to be undertaken. Communities that reside within the potential zone of pollution (noise and air) would also require relocation. The relocation of communities impact on existing livelihoods and sense of community and inadvertently requires additional capital expenditure to relocate communities and to provide the level of livelihood previously held.	—	②	⑤	⑤	⑤	60 Medium - High	In order to ensure that people are not worse off after the relocation an authority approved process needs to be established with the stakeholders, which will involve establishing their current needs and expectations. On the basis of this information an ongoing development plan should be established, which ensures that people's quality of life is equal and or better than before the resettlement. Economic upliftment needs to be an important focus of such plan. The implementation of the plan should be the responsibility of both the SEZ and LEDA and should be independently audited. Continued consultation and negotiation with the relocated communities is needed. A plan to monitor and evaluate people's living conditions and to address unforeseen problems should be set up.	Low - Medium

Impact	Impact Description	Status of Impact	Impact Significance Prior to Mitigation					Mitigation Measures	Impact Significance Post Mitigation
			Extent	Duration	Magnitude	Probability	Significance		
Increased burden of disease	Data indicates that working-age groups (i.e. 15 to 64 year old population) are disproportionately affected by HIV/AIDS. Likewise, working-age men are also more likely to succumb to injuries such as accidental threats to breathing and road injuries. Considering the preceding, the construction of the proposed MMSEZ could lead to the influx of job seekers, contractors and foreign nationals. The influx of population to the host community could contribute to an increase of the local burden of disease. The increase of job-seekers and contractors could raise the potential to transmit communicable diseases such as TB, HIV/AIDS, meningitis and respiratory infections. The risk of injury could increase above that of the local community average due to construction activities. The risk of injury could lead to a range of health impacts and require specialised treatment. Due consideration should also be afforded to Covid-19 in the sense that the persistent nature of the virus could lead to a long-term healthcare crisis. The longevity of the virus within communities and the transmission thereof due to population movement in and out of the host communities is a critical risk factor.	—	③	③	③	④	36 Medium	The construction period of the MMSEZ is expected to take some time and therefore the probability for increased transmission of communicable diseases is probable. The potential for injury related risks is heightened due to the injury prone nature of the construction industry. Similarly, job-seekers not employed during the construction phase could form part of the segment of population living below the minimum living level – these population groups experience the effects of diseases related to malnutrition and unhygienic living conditions. Key mitigation measures include: ✓ The implementation of awareness/ education campaigns targeting prominent diseases such as HIV/AIDS, TB, and malnutrition ✓ Ensure ease of access to relevant information and condoms for construction workers ✓ Collaborate with local healthcare facilities, public and private, to consider potential measures and systems that can be implemented to enable access to appropriate testing and treatment	Medium

Impact	Impact Description	Status of Impact	Impact Significance Prior to Mitigation					Mitigation Measures	Impact Significance Post Mitigation
			Extent	Duration	Magnitude	Probability	Significance		
Increased pressure on local healthcare sector	The potential to increase the local burden of disease influences the possibility of similarly increasing the prospect of overburdening local healthcare resources. Data suggests that the availability of healthcare beds are limited in the Vhembe District. On average, approximately 76.5% of hospital beds in the district are used. Data shows that the average number of beds per 10 000 people in the district is 12.9. The District is therefore ranked 38th out of 52 district zones. The preceding shows that a limited number of hospital beds are available in the local healthcare system. The burdened healthcare system could be exacerbated due to increased community transmission of prevalent diseases, especially Covid-19. The healthcare system could also be influenced by injury related risks.	—	③	③	③	④	36 Medium	To ensure the stability of local healthcare infrastructure, developers, government and local healthcare should engage to consider necessary systems, processes and consignments that can be put in place to minimize overburden potential. Especially considering workplace related injuries. Construction agencies should also ensure that compliance with minimum health and safety standards are maintained during the construction period. Local health facilities should also seek to enhance education programmes regarding primary localised diseases. Demand for healthcare facilities should be continuously monitored to assess whether local capacity is sufficient to serve growing communities – especially during periods of high population influx.	Medium
Increased risk that social ills could materialise	An influx of population either employed or looking for employment, may lead to increased crime activity. Opportunity seekers that do not acquire employment may turn to crime and in turn influence local community safety. The introduction of persons outside the local labour market (i.e. sourcing from other provinces for instance) could introduce a criminal element. Additionally, contractors undertaking construction of the SEZ may also, due to bad behaviour, influence community safety through inappropriate actions.	—	②	②	②	③	18 Low - Medium	Working hours should be kept to day-light hours. Appointment of security services at the construction site. Implement necessary health and safety standards and procedures. Ensure local law enforcement monitors local communities for increased crime related to the construction of the SEZ.	Low - Medium

Impact	Impact Description	Status of Impact	Impact Significance Prior to Mitigation					Mitigation Measures	Impact Significance Post Mitigation
			Extent	Duration	Magnitude	Probability	Significance		
Partial loss of areas visual appeal and amenity value, in particular for tourism and accommodation activities	The construction phase and related activities could partially influence the area's visual appeal and amenity value (in particular for tourism and accommodation activities). The impact could influence tourist facility and accommodation attractiveness and therefore influence revenue generation capacity and employment opportunities generated by the afore mentioned tourist facilities and accommodation.	—	②	⑤	⑤	⑤	60 Medium - High	In order to minimize the effects of visual appeal loss, design initiatives could seek to create a buffer zone between the border of the project site and surrounding areas in order to distance undesirable viewpoints from onlookers. Natural environmental features such as trees could be utilised to maximise visual appeal from major transport routes and other viewpoints. Other measures may include: ✓ Careful attention must be given to the siting and design of all buildings. ✓ Screening vegetations should be used wherever possible. ✓ Temporary roads and construction sites must be clearly demarcated and rehabilitated.	Medium - High
Introduction of industrial activities to natural environment	The construction of industrial activities would create long-term changes to the natural environment of the proposed development site.	—	②	⑤	⑤	⑤	55 Medium - High	As a result of constructing the Musina-Makhado SEZ, natural environment will be lost and replaced by industrial activities. The design of the SEZ should seek to incorporate green spaces as part of the project area.	Medium - High
Impact of air, noise and soil quality on existing economic activities	Economic activities such as tourism and agriculture could be affected due to increased air, noise and soil quality impacts generated during the construction phase of the project. The attractiveness of economic opportunities for tourism and/or agriculture may be influenced due to limited demand and less desirable tourist conditions as well as limiting productive agricultural land.	—	②	⑤	⑤	⑤	40 Medium	Considerations for mitigating the effects of pollution generated by the SEZ would be to keep the SEZ aligned to the carbon emissions tax implemented by the South African Government. Additionally, all plant and equipment should be kept in good working condition. Traffic flow and movement should be planned for efficiency in order to minimise vehicle pollution.	Medium

Impact	Impact Description	Status of Impact	Impact Significance Prior to Mitigation					Mitigation Measures	Impact Significance Post Mitigation
			Extent	Duration	Magnitude	Probability	Significance		
Impact on local property markets, i.e. diminished amenity value and increased property value	The construction phase of the SEZ could spur property market activity in nearby towns, construction activities could potentially diminish the amenity value of adjacent farms.	—	②	⑤	③	⑤	50 Medium - High	The undertaking of construction activities is expected to impact on surrounding property amenity value. It is essential that construction efforts do not influence the environmental or working environment of local farms.	Medium
Increased demand for various land uses	The construction of the SEZ may lead to increased demand to develop land uses such as residential, retail and commercial activities in expectation of future demand once operations start.	+	②	②	④	④	32 Medium	Perceived future demand for land uses due to the construction of the SEZ and eventual operation would influence the undertaking of developmental activities in the Musina and Makhado area. It is essential that coordination between the SEZ and local authorities be undertaken to ensure that appropriate developmental activities are undertaken that compliment and service the SEZ.	Medium – High
Increased prospect of informal settlements	The attraction of job-seekers to the local economy may increase the demand for residential opportunities and the prospect of locating in an informal settlement or informal backyard dwelling. The increased demand could lead to the expansion of existing informal settlements in the local economy or could create new informal settlements close to existing economic nodes or the construction area.	—	②	⑤	④	④	44 Medium	Due to the prospect of employment opportunities, in-migration to the area is expected. In-migration may lead to an oversupply of labour and opportunity seekers not employed may remain in the area to capitalise on other opportunities. It is thus essential that forward planning by the SEZ and local authorities be undertaken to minimize the effects of informal settlement establishment either close to the SEZ or in major towns such as Musina and Makhado.	Medium

Source: DEMACON, 2019

QUALITATIVE OPERATIONAL PHASE IMPACTS

Table 7.13: Qualitative Operational Phase Impacts

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Sustained demand for products and services from local businesses (e.g. retail, entertainment, accommodation, construction, etc)	The sustained operations and operational revenue of the mine and the resulting direct, indirect and induced impacts generate continuous demand for products and services in the local economy. The sustained demand could enhance the growth of opportunities for local businesses to expand or new businesses to be established.	+	②	④	③	⑤	55 Medium - High	Ensure that procurement from local businesses are prioritised during the operational phase in order to enhance local economic development.	High
Local businesses supply side constraints to fulfil increased demand for products and services	Due to an increase in population, manufacturing activities and other economic sector growth, demand for products and services may initially not be fulfilled by the existing business community. Over time the local business environment may grow to accommodate the new level of demand generated.	—	②	④	④	⑤	50 Medium - High	Should local business not be able to sufficient supply the SEZ, businesses in the broader area should be identified as potential suppliers. This will allow for greater economic development beyond that of the host municipalities. Pro-active planning should be undertaken to identify potential growth catalysts for the local economy to service demand. Additionally, an investor friendly and conducive local business environment should be created to accommodate new development.	Low - Medium
Opportunities to expand local business base through production, capacity, and sales (e.g. construction, manufacturing, retail, etc.) or the establishment of new businesses	The number of local businesses as well as the output generated by these businesses may increase due to growing and sustained demand. The growth of local businesses as well as newly established businesses could increase the economic output of the local and regional economy and in effect spur growth.	+	②	④	③	⑤	45 Medium	Ensure that procurement from local businesses are prioritised during the construction phase in order to enhance local economic development.	High

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Opportunity to develop backward and forward linking industries for the manufacturing sector, i.e. inputs to the manufacturing sector and sale of intermediate and final products	Due to the specific nature of the Musina-Makhado SEZ, further downstream value-chain business growth could be achieved. The refinement of semi-finished output from the SEZ could be undertaken in a range of final outputs specific to the construction, vehicle, appliance, etc manufacturing sectors.	+	③	④	④	③	33 Medium	Possible supporting industries could be identified throughout the Limpopo, Mpumalanga Gauteng and North-West Provinces that could potentially form part of down-stream value additions. Wider economic region regions such as the Western Cape, Eastern Cape and KwaZulu-Natal can also undergo business identification, but measures for sufficient linkages should be put in place.	High
Diversification of the regional economy	The addition of specialised manufacturing activities in the SEZ provides for the diversification of the regional and local economies and subtracts from the dependence on one or two major economic sectors for economic growth.	+	⑤	④	④	④	52 Medium - High	The operation of SEZ activities in the metallurgical manufacturing sector could provide the opportunity for diversification of the local economy beyond its current form. The encouragement and facilitation of new businesses that either support or adds value to SEZ operations will allow for economic growth and the increase of employment opportunities. The encouragement of new business development could be facilitated by means of incubators and local government initiatives in collaboration with the SEZ.	High
Opportunity to attract additional foreign and domestic investment to the Musina-Makhado area	Investment by businesses locally and foreign would enhance the growth and development of the local economy.	+	③	③	④	⑤	50 Medium - High	The SEZ has procured foreign direct investment as part of the start-up of the project. Further FDI could be facilitated through the successful implementation of planned initial projects. Buy-in from local established and new metallurgical operators could also be facilitated in order to drive completion and expansion of the SEZ.	High

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Linkages to national SIP projects and areas	The Strategic Infrastructure Projects otherwise known as SIPs as part of the national Infrastructure Plan seeks to unlock economic opportunities through infrastructure investment. The Musina-Makhado SEZ is well positioned in regard to the SIP1 and SIP 17. SIP 1 is focused on unlocking the northern mineral belt while SIP 17 seeks regional integration between South Africa and other SADC nations through logistics corridors. The SEZ is positioned to form part of the beneficiation value-chain of the mining sector of the northern mining belt, whilst also being strategically positioned along the N1 highway corridor.	+	④	④	⑤	⑤	65 High	Because of the SIP 1 focus to promote and unlock mineral resources in the northern mining belt, the SEZ is strategically positioned to form part of the mineral beneficiation value chain. The SEZ should seek to obtain project specific raw material inputs from multiple service providers in order to encourage cross-platform growth of the mining industry. Appropriate linkages with road and rail corridors should be facilitated to allow for the effective movement of cargo between the origin and destination areas. Cross border trade and export of products could be enhanced by the N1 highway corridor and linkages to major ports.	High
Medium-term employment opportunities (Job creation across the skills spectrum) – includes direct, indirect and induced impacts as a result of the SEZ's operation.	Operations at the SEZ will generate direct, indirect and induced job creation at the mine and economy wide. Especially considering the opportunity for employment growth throughout the value-chain.	+	②	④	④	⑤	50 Medium - High	Local should be prioritised for available employment opportunities. A coordination effort should be undertaken between contractors and local community representatives to ensure beneficial opportunities for local communities as well as ensure efficient construction operations.	High

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Localised labour supply side constraint (in terms of quantity and quality of requisite skills)	Employment in elementary occupations such as manufacturing labourers in the host municipalities account for between 2.5% and 4.1% of skilled labour thus indicating that a potential mismatch may exist between local labour and SEZ operational requirements.	—	②	②	③	④	28 Low - Medium	In order to prevent a mismatch of skills during the operation phase could focus on creating programmes that undertake either: ✓ Generic skills training, ✓ Targeted training in specific skills, ✓ Targeted training for specific skills shortages, or ✓ Training in firm-specific skills in/by companies Pro-active skills mismatch prevention could focus on training of employed and unemployed persons through skills development programmes targeting specific sectors at TVET and other colleges.	Low - Medium
Local labour supply side constraints to be mitigated through targeted skills development of local communities	Increase of skilled labour to undertake operations at the SEZ.	+	③	④	③	④	40 Medium	The SEZ, in conjunction with local authorities and the Limpopo Eco-Industrial Park, could facilitate industry specific skills development through training facilities. It increase in skills would be beneficial to down-stream value addition, the manufacturing of the province and country as a whole and the encouragement of new business development.	Medium - High

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Local labour supply side constraints to be mitigated through targeted skills development of local communities	Due to the limited availability of skilled labour necessary to undertake operational efforts, the import of skilled labour to the area to undertake operation activities may be required. According to the Internal Master Plan (August 2019), on average 11% of employed persons at the SEZ are to be sourced from the Chinese labour market. Thus imposing a minor import of labour to the local economy.	—	②	⑤	④	③	55 Medium - High	In order to prevent the import of labour due to insufficient skills in the local labour force, focus should be given to skills training in the local community. Employment during the operational phase should also be focused on local procurement as far as possible. Skills mentorship programmes could be initiated to allow for local labourers to gain necessary skills during training and obtain employment in the SEZ. Additionally, should the import of labour from outside the current labour pool be necessary, the focus should be temporary imports until such time that the local labour force has sufficient skills to undertake construction activities.	Low - Medium
Sustained pressure hard infrastructure (e.g. roads, electricity, etc.) – increased maintenance burden and new investment	The operation of the SEZ would create sustained attraction of job-seekers. Additionally, day-to-day operations by the SEZ would also increase the use of infrastructure (e.g. roads, rail, etc) The increase of workers employed at the SEZ would continue to place strain on local service delivery infrastructure to accommodate population, household and business growth.	—	③	④	④	⑤	55 Medium - High	Sustained pressure on existing infrastructure would require continuous maintenance and upkeep, especially roads frequented by heavy vehicles.	Medium-High

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Increased daily loads on the local transportation network to transport labour to and from the site (home to work and work to home commute)	The operation of the SEZ increases the daily load that local transport infrastructure supports when labour moves to and from (and vice versa) their home and work. Increased daily loads could influence localised traffic and business peak and off-peak hours – therefore impacting on revenue generation.	—	②	④	③	④	36 Medium	Establish working hours that would assist with mitigating local community impacts and ensure operational efficiency. Avoid heavy trucks during peak traffic hours. The provision of adequate and strategically positioned traffic warning signs. Roads used for day-to-day operations should be maintained. Day-to-day operation movement patterns should be mitigated to ensure that construction efforts do not influence surrounding property owner operations.	Low - Medium
Sustained increase of household income during the operational phase of the project	The operation of the mine creates direct, indirect and induced employment opportunities throughout the economy. As a result of these employment opportunities, household incomes are increased – i.e. livelihood improvements. The impact may last the duration of the operation of the SEZ, unless downsizing is to occur – where households that may have had a steady monthly income may lose this income.	+	③	②	④	⑤	45 Medium	By procuring local communities for employment, a rise in household income would be created and directly affect the livelihood of local communities. Increased consumer spending will also benefit local businesses and encourage business development and growth.	High

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Sustained pressure on soft infrastructure (e.g. social amenities and services) - increased maintenance burden and new investment	Social facilities and amenities (e.g., healthcare, policing, postal services, etc) demand could rise because of an influx of employment seekers and the improved livelihoods of households that benefitted as a result of the direct, indirect or induced impact of the mine's operation.	—	②	②	③	④	28 Low - Medium	Local authorities in conjunction with the SEZ should undertake appropriate studies to determine the possible extent of demand generated during the construction phase for social services. Sufficient knowledge regarding potential short-falls could allow for the implementation of additional services for accommodate short-term demand as well as function as mitigation measures for medium- to long-term demand.	Low - Medium
In-flux of employment seekers	The prospect of employment opportunities in the Musina-Makhado area would attract potential labour force participants from the broader area as well as from bordering supporting municipalities. Migrants may also originate from nearby Zimbabwe and Botswana. Cross-border migrants could consist of legal and illegal opportunity seekers and may impact on the sourcing of labour from local domestic markets due to the less expensive nature of foreign workers. Due skills limitation in the local area, skilled labour imports from other domestic or international markets are possible.	—	③	②	③	⑤	40 Medium	To mitigate the effects of large-scale in-migration to the project are, necessary planning and research should be undertaken. A local migration plan undertaken by local government and the SEZ should be done in order to project and identify the potential size of migration to the area, potential locations for settlement and the additional strain placed on the local economy, services and infrastructure. The migration plan should be done in conjunction to spatial planning policies of local government in order to ensure sustainable and efficient spatial remedies and objectives.	Medium

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Burden of disease	Data indicates that working-age groups (i.e. 15 to 64 year old population) are disproportionately affected by HIV/AIDS. Likewise, working-age men are also more likely to succumb to injuries such as accidental threats to breathing and road injuries. During the operational phase of the MMSEZ project more than 50 000 people are expected to be employed. Besides the local labour market increase, an influx of job-seekers is also likely - further contributing to a rise in local population. The increase in population and anticipated in-migration can actively drive an increase of the local burden of disease. The increase of job-seekers and employees of the MMSEZ could raise the potential to transmit communicable diseases such as TB, HIV/AIDS, meningitis and respiratory infections. The risk of injury could increase above that of the local community average due to the high-risk nature of industries that will operate in the MMSEZ. The risk of injury could lead to a range of health impacts and require specialised treatment. Due consideration should also be afforded to Covid-19 in the sense that the persistent nature of the virus could lead to a long-term healthcare crisis. The longevity of the virus within communities and the transmission thereof due to population movement in and out of the host communities is a critical risk factor.	—	③	④	③	④	40 Medium	The operational period of the MMSEZ would continuously attract job-seekers over and above the already employed labour force of the project. The persistent growth of population and potential increase of dependency ratios could lead to a continued increase of the burden of disease. The risk of injury related deaths and healthcare further requires careful consideration. Key mitigation measures include: ✓ The implementation of awareness/ education campaigns targeting prominent diseases such as HIV/AIDS, TB, and malnutrition ✓ Ensure ease of access to relevant information and condoms for construction workers ✓ Collaborate with local healthcare facilities, public and private, to consider potential measures and systems that can be implemented to enable access to appropriate testing and treatment ✓ The SEZ development should be accompanied by concomitated social investment in healthcare, education and housing which would create certain supply side improvements also in terms of medical/healthcare facilities.	Medium

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Increased pressure on local healthcare sector	Rapidly growing communities could increase the local burden of disease and could further burden and overwhelm local healthcare resources. Data suggests that the availability of healthcare beds are limited in the Vhembe District. On average, approximately 76.5% of hospital beds in the district are used. Data shows that the average number of beds per 10 000 people in the district is 12.9. The District is therefore ranked 38th out of 52 district zones. The burdened healthcare system could be exacerbated due to increased community transmission of prevalent diseases, especially Covid-19. The healthcare system could also be influenced by injury related risks.	—	③	④	③	④	40 Medium	To ensure the stability of local healthcare infrastructure, developers, government and local healthcare should engage to consider necessary systems, processes and consignments that can be put in place to minimize overburden potential. Especially considering workplace related injuries. Industries in the MMSEZ should ensure that compliance with minimum health and safety standards are maintained during the operational phase of the project. Local health facilities should also seek to enhance education programmes regarding prevalent localised diseases. Demand for healthcare facilities should be continuously monitored to assess whether local capacity is sufficient to serve growing communities – especially during periods of high population influx.	Medium

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Improved Access to Healthcare	Data shows that between 7% and 8% of people within the host communities of the SEZ have access to medical insurance. Employment opportunities created by the MMSEZ directly, or as a result of indirect or induced economic effects, provide households with increased household incomes. Consequently household livelihoods are improved and therefore a broader spectrum of goods and services can be accessed. An increased number of households will be in a position to afford improved healthcare. Increased job opportunities throughout the economy could drive community growth and therefore increase demand for healthcare facilities.	+	③	④	②	④	36 Medium	Demand for healthcare facilities should be continuously monitored to assess whether local capacity is sufficient to serve growing communities. Proactive identification of development opportunities for healthcare facilities should be undertaken by the MMSEZ or government. Investment packages that could entice developers to invest in such a development should be compiled and advertised. Employee access to medical schemes should be considered by MMSEZ employers in order to enhance community health.	Medium
Sustained risk that social ills could materialise	An influx of population either employed or looking for employment, may lead to increased crime activity. Opportunity seekers that do not acquire employment may turn to crime and in turn influence local community safety. The introduction of persons outside the local labour market (i.e. sourcing from other provinces for instance) could introduce a criminal element.	—	②	②	②	③	18 Low - Medium	Working hours should be kept to day-light hours. Appointment of security services at the construction site. Implement necessary health and safety standards and procedures. Ensure local law enforcement monitors local communities for increased crime related to the construction of the SEZ.	Low - Medium

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Social investment by the SEZ into local communities	Due to the potential stimulus that the Musina-Makhado SEZ could generate in the local, regional and national economy, social investment by the SEZ into local communities is necessary to ensure long-term sustainability of the SEZ and local communities.	+	②	④	④	⑤	50 Medium - High	The SEZ, due to its proximity to local communities and strategic location could actively contribute to the social-economic development of local communities. The design of community investment plans could generate opportunities to improve local community livelihoods and encourage socio-economic development. Community investment could be focused on education, skills development, the assistance of vulnerable and indigent communities, infrastructure investment and social services investment.	High
Partial loss of areas visual appeal and amenity value, in particular for tourism and accommodation activities	The impact would most likely influence the tourism industry (including accommodation) whereby a lower visual appeal or amenity value could limit tourists visiting the area and by effect limit the revenue generated by the sector. The abundance of game farms and leisure activities adjacent and close to the Musina-Makhado SEZ could impact on the desirability of these tourist destinations. The loss of visual appeal coupled with potential pollution and heavy traffic flow are factors impacting on tourism activities.	—	②	⑤	④	⑤	55 Medium - High	In order to minimize the effects of visual appeal loss, design initiatives could seek to create a buffer zone between the border of the project site and surrounding areas in order to distance undesirable viewpoints from onlookers. Natural environmental features such as trees could be utilised to maximise visual appeal from major transport routes and other viewpoints. Other measures may include: ✓ Landscaping of all cut slopes should be undertaken. ✓ Transport corridors should be planned so that they have as small a visual impact as possible, e.g. the pipeline and conveyor structure should be combined. ✓ Careful attention must be given to the siting and design of all buildings. ✓ Screening vegetations should be used wherever possible. ✓ In cooperation with local tourism agencies and operators, the SEZ should seek to appropriately plan and identify	Medium

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
								the extent of impacts and create a long-term mitigation strategy.	
Impact of air, noise and soil quality on existing economic activities	As a result of the manufacturing nature of the SEZ the production of air, ground and noise pollution is high. The operation of the SEZ would also be one of the single greatest carbon emissions contributors in the country thus negatively affecting the country's commitment to lower carbon emissions.	—	⑤	④	④	⑤	65 High	Considerations for mitigating the effects of pollution generated by the SEZ would be to keep the SEZ aligned to the carbon emissions tax implemented by the South African Government. Additionally, all plant and equipment should be kept in good working condition. Traffic flow and movement should be planned for efficiency in order to minimise vehicle pollution.	Medium - High
Impact on local property markets, i.e. diminished amenity value and increased property value	Local property markets could be impacted. Whereas SEZ activity could spur property market activity in nearby towns, the industrial nature of the SEZ could potentially diminish the amenity value of adjacent farms.	—	②	⑤	③	⑤	50 Medium - High	The heavy industrial nature of operations at the SEZ, coupled with potential air pollution, is expected to diminish the amenity value of surrounding properties. Screening and related buffers could be put in place to minimize impacts.	Low - Medium
Sustained demand for new development (i.e. residential, retail, etc.)	Due to the increased livelihoods of households as a result of the direct, indirect and induced impacts of the operation of the SEZ, increased demand for land uses such as retail, entertainment, etc. can occur. The influx of population to the area could also drive demand growth.	+	②	③	④	④	36 Medium	Operation of the SEZ and in-migration to the Musina-Makhado area will create increased demand for multiple land uses, i.e. residential, retail, business and industrial. It is essential that coordination between the SEZ and local authorities be undertaken to ensure that appropriate developmental activities are undertaken that compliment and service the SEZ.	High

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
State revenue potential through additional rates and taxes (to address inter alia infrastructure supply and maintenance demand)	The construction of new developments in local nodes, close to the SEZ and in other communities contribute toward the revenue base of the local authority within which the development takes place. Increased revenue generated by local authorities can assist with improved service delivery in local communities and allow for the implementation of programmes, initiatives and projects that could support local economic development parallel to and in support of the SEZ. The increased revenue can also be applied to ensure maintenance of transport and utilities infrastructure.	+	②	⑤	④	④	44 Medium	The local authorities of Musina and Makhado should streamline the town planning application process in order to encourage new developers to undertake construction activities. Spatial planning by local authorities should also be undertaken to identify appropriate locations for development so as to ensure sustainable and efficient urban growth in line with SEZ requirements. Effective forward planning would enable sufficient bulk services planning. Effective service delivery coupled with new development initiatives could actively contribute to the rates base of the host municipalities and enhance revenue generation.	High
Increased prospect of informal settlements	Existing informal settlements could expand or new settlements could be established due to an influx of job-seekers to the local economy who cannot find employment. Likewise, employees of the SEZ or beneficiaries of an indirect or induced employment opportunity locate to an informal settlement or informal backyard dwelling due to low costs.	—	②	③	④	④	36 Medium	Due to the prospect of employment opportunities, in-migration to the area is expected. In-migration may lead to an oversupply of labour and opportunity seekers not employed may remain in the area to capitalise on other opportunities. It is thus essential that forward planning by the SEZ and local authorities be undertaken to minimize the effects of informal settlement establishment either close to the SEZ or in major towns such as Musina and Makhado.	Medium

Theme	Specific Impact and Description	Status of Impact	Extent	Duration	Magnitude	Probability	Significance	MITIGATION MEASURE	Impact Significance Post Mitigation
Speculative pricing activity in nearby towns can be expected	Quality new developments in the Musina and Makhado towns may spur increased property prices.	+	②	③	④	④	36 Medium	Due to increased demand for new developmental activity, existing property market values may increase. Local authorities should provide guidance, in conjunction with the SEZ, to property developers in order to create sustainable developments that are not in conflict with SEZ proposals and beneficial to local property markets.	High

Source: DEMACON, 2019

7.6 SYNTHESIS

The following provides a concise overview of Chapter 6 in order to outline the key socio-economic impacts associated with the Musina-Makhado SEZ.



PROPOSED MUSINA-MAKHADO SEZ

- ✓ The Musina-Makhado SEZ is located between the towns of Musina and Makhado along the N1 Highway on 8 farms totalling 8 048 hectares in extent.
- ✓ The metallurgical cluster is positioned to beneficiate metals from raw materials and is inclusive of up- and down-stream supporting activities.
- ✓ The operations of the Musina-Makhado SEZ include:
 - A power plant,
 - Coke plant,
 - Ferro-chrome plant,
 - Ferro-manganese plant,

- Pig iron plant,
- Carbon steel plant,
- Stainless steel plant,
- Lime plant,
- Silicon-manganese plant,
- Metal-silicon plant, and
- Calcium carbide plant.

- ✓ Supporting operations include:
 - Staff accommodation,
 - Business activities,
 - Retail activities, and
 - Intermodal facilities.



QUANTATIVE IMPACT ASSESSMENT

- ✓ Quantitative impacts have been based on an input-output model.
- ✓ Outcomes of the model shows that:

- Construction Phase
 - Additional Business Sales = R573.7 billion
 - Additional GGP = R195.4 billion
 - Additional Employment = 838 765 jobs
- Operational Phase
 - Additional Business Sales = R868.8 billion
 - Additional GGP = R295.9 billion
 - Additional Employment = 1 270 294 jobs



QUALATIVE IMPACT ASSESSMENT

- ✓ The chapter shows that a multitude of impacts could be generated through the construction and operation of the SEZ. The most profound impacts are generated in the local economy by means of business development, down-stream value adds and skills development , whilst impacts on local communities include increased opportunities for employment, increased household incomes and livelihoods and skills development and opportunities for entrepreneurship. Increased household income could enable households to access a wider range of healthcare opportunities.
- ✓ Negative aspects could include increased movement and transportation activities, decreased property value of adjacent farmers, significant in-migration, and the growth of informal settlements. The burden of disease in local communities could be increased due to an influx of population.

CONCLUSION



8 CONCLUSION

8.1 INTRODUCTION

The chapter provides a synthesis of the Musina-Makhado socio-economic impact assessment and provides a high-level overview of key outcomes.

8.2 ANALYSIS OVERVIEW

8.2.1 LOCATION ANALYSIS OVERVIEW

The Musina town has been identified as a rural service centre by the Draft National Spatial Development Framework (2018). The Makhado town is identified as an urban growth point which acts as a support location to rural services centres and surrounding communities.

In the context of the Limpopo Province, the towns have been identified as provincial growth points due to their locality to the N1 highway primary corridor and diversified socio-economic service infrastructure. The Musina municipality is also home to the proposed Limpopo Eco-Industrial Park (or Musina SEZ).

Property trends indicate that home owner stability is more prominent in the Musina town than Makhado because of the high number of residential properties to purchase in Makhado. Development activity, especially residential development is sporadic and demand dependent, whilst non-residential development show greater stability historically.

8.2.2 MANUFACTURING AND METALLURGICAL SECTOR ANALYSIS

The manufacturing sector in South Africa is one of the primary economic growth, contributing and employing sectors in the country. Manufacturing activity is largely concentrated in the metropolitan regions of the country and gravitate towards special economic zones. The manufacturing sector as a whole has steadily been decreasing since 2008 and has shed output and employment.

The Limpopo Province contributes only 7.3% to the total manufacturing output of the country and is one of the lowest manufacturing employing provinces.

The remuneration of employees in the manufacturing sector for 2018 was more than R20 000 nationally, which is significantly higher than the average for Limpopo, the Vhembe District and Musina and Makhado local municipalities.

Metallurgy in South Africa is well-established and produces products in the metals and ferro-alloys industries. South Africa is one of the top ferro-chromium producers in the world and has had stable steel production over the past 10-years.

South Africa primarily exports to China. In recent years Chinese demand for steel and ferro-alloys has decreased and global over-supply is ever present due to the magnitude of Chinese metal producers. A global market downturn in recent years as well as slowing local demand has seen diminished output by local producers

Currently, 10 special economic zones are designated in South Africa of which 5 are currently operational, with other SEZ's in various stages of implementation.

8.2.3 ECONOMIC PROFILE

The Makhado Local Municipality contributes nearly half of the GVA output of the Vhembe District compared to 10% contribution by the Musina Local Municipality.

For the Musina and Makhado Local Municipalities economic sectors such as: wholesale and retail trade; mining and quarrying; general government; and financial and business services are most prominent. Employment in

both municipalities is largely dependent on the agricultural, retail and community services sectors.

8.2.4 DEMOGRAPHIC PROFILE

The Musina and Makhado municipalities host more than 670 000 people and 200 000 households. Local residents primarily reside in formal dwellings whilst an abundance of informal and traditional dwellings also exist.

Households in the Musina municipality primarily rent the property on which they reside as oppose the Makhado municipality where households generally own the property on which they reside.

Average annual household income in the Musina Municipality is on average higher than the Makhado Municipality. For All LSM groups the average annual household income in the Musina municipality is R68 789 compared to R 62 642 in the Makhado municipality. More than 80% of households in the Musina and Makhado municipalities can be categorised as LSM 1 to 3.

8.3 SOCIO-ECONOMIC IMPACT OVERVIEW

8.3.1 QUANTATIVE AND QUALATIVE IMPACT OVERVIEW

The relatively small size of the manufacturing sector in the Limpopo Province poses an opportunity by the Musina-Makhado SEZ to create local, national, provincial and socio-economic gains.

The SEZ and its intended operations are positioned to play a substantial role in the growth and diversification of the economy (local, regional and national) by introducing mineral beneficiation in the metals and ferro-alloys industries (an industry that is limited in the province). The SEZ is set to become the first operational special economic zone in the province and is positioned to agglomerate supportive and down-stream industries into the local, regional and international markets.

The SEZ is positioned to create considerable economic and social impacts. The proposed operations of the SEZ could, through leveraging of the economic multiplier effect, potentially create up to 4.4 jobs for every R1

million capital invested. In addition to the estimated 52 000 on-site employment opportunities to be created by the SEZ, approximately 838 000 new employment opportunities could be created during the entire construction phase (10 year-period) and up to 1.2 million new operational phase jobs created and sustained (at maturity and full capacity).

The additional business sales that could be created by the SEZ during construction phase of the project amounts to more than R573 billion whilst the operational phase additional sales created and sustained could account for more than R868 billion. Additional GGP created during the construction phase (10-year period) could amount to more than R195 billion and during the operational phase a total of approximately R295 billion additional GGP could be created and sustained annually.

Aside from the direct impact generated by capital and operational expenditures, various local socio-economic impacts could be created. Its common cause that nearby communities are tribal in nature and that skills levels are low. The labour requirements of the SEZ in general and those of its future operators in particular, need to be timeously identified to ensure optimal alignment by local training and recruitment initiatives – and to minimise the need for imported labour.

The magnitude of capital investment anticipated could potentially create considerable demand and supply side impacts. The fairly rapid nature of the scale of investment planned over a fairly focused timeframe will create considerable demand and supply side pressures. Proper planning will be required to ensure that labour force settlement and associated community development takes place in a structured manner and that demand side responses are timeously implemented in a phased manner – including but not limited to land for human settlement, formal housing initiatives and associated development of ancillary facilities such as retail, recreation, healthcare, education, banking, policing, etc.

The increased livelihoods of local communities also affect the demand for socio-economic services. The increased spending potential of local communities allow for the growth in demand for additional services and directly influences the growth of new businesses. It should be noted that although a significant number of employment opportunities could be generated, these opportunities are not instantaneous but progressive over

time. Independent studies indicate that the sphere of influence generated by a SEZ diminishes as the distance from the SEZ core increases. Agglomeration of economic activities in support of the SEZ would augment the impact created by the SEZ.

The influx of labour to the area is set to stimulate various demand and supply side impacts. The prospect of job opportunities would fuel considerable in-migration to the area, thereby creating a myriad of impacts on economic infrastructure, including hard as well as soft infrastructure. Hard infrastructure includes road, rail, water sanitation, electricity. Soft infrastructure includes the full spectrum of social facilities and amenities including but not limited to hospitals, police stations, libraries, home affairs offices, community halls, post offices, cemeteries, schools and creches, sports facilities, active and passive recreational spaces, resources centres. Well-structured supply side responses need to be in place to ensure orderly development - the SEZ development will be accompanied by extensive infrastructure upgrades and investments. As with any large scale development, there is a risk that social ills could materialise. – informal settlements, sex workers, STD's, communicable diseases, HIV/AIDS, TB, crime. Proper planning for orderly human settlement could mitigate the likelihood of these risks materialising.

The area reveals a particular burden on diseased, characterised by the following:

- ✓ Age groups younger than 5 years
 - The leading cause of death for the age cohort is characterised by communicable diseases that exclude HIV and TB and maternal, perinatal and nutritional disorders (71% of deaths).
 - Leading causes include diarrhoeal diseases, protein-energy malnutrition and lower respiratory infections.
- ✓ Age groups 5 to 14 years
 - The leading cause of death for the age cohort is characterised by communicable diseases that exclude HIV and TB and maternal, perinatal and nutritional disorders (71% of deaths) and HIV-related and TB (24%).
 - Leading cases include HIV/AIDS (13 to 15%), Tuberculosis (8 to 13%) and Diarrhoeal diseases (11% to 12%).

- ✓ Age groups 15 to 24 years
 - The leading cause of death for females are HIV-related and TB causes (31% of deaths. The leading cause of death amongst males in the age cohort are as a result of injuries (54% of deaths).
 - Females within the age cohort are primarily affected by HIV/AIDS and Tuberculosis, whilst males are primarily affected by Accidental Threats to Breathing and Road Injuries.
- ✓ Age groups 25 to 64 years
 - The leading cause of death within the age cohort includes non-communicable diseases (36% to 42%) and HIV-related and TB (32% to 33%) causes.
 - Male and female population within the age cohort are primarily affected by HIV/AIDS (16% to 18%), Tuberculosis (13% to 16%) and lower respiratory infections (7% to 8%). Diabetes is the primary on-communicable disease affecting the age cohort.
- ✓ Age groups 65 and older
 - The leading cause for death in the age cohort is non-communicable diseases (72% to 77%).
 - Leading cases affecting population in the age group include cerebrovascular disease (11% to 17%), diabetes (10% to 12%) and hypertension heart disease (9% to 12%).

On average, approximately 8.5% of people in the Limpopo Province have access to a medical aid scheme. When considering the Vhembe District, the average proportion of people falls well below that provincial average (7.2%). The Musina and Makhado host communities on average have between 7.3% and 7.4% of people who are medically insured. The medical insurance deficit places a burden on public sector healthcare, and the capability of the healthcare system to lower the burden of disease. In light of the burden of disease, the Covid-19 virus does pose a risk in terms of community transmissions, the capability of local healthcare systems, demand for related social amenities and the capability of local communities to earn a living given current economic conditions and lockdown regulations.

Local property markets could be impacted. Whereas SEZ activity could spur property market activity in nearby towns, the industrial nature of the SEZ could potentially diminish the amenity value of adjacent farms. Property

owners adjacent to the SEZ could experience a decrease of market value while new developments in local towns could spur property values.

The construction and operation of the SEZ is likely to promote business and economic development in the local economy. The considerable additional job creation is set to create increased levels of disposable income and associated increases in buying power which, in turn, could create further downstream benefits in various value chains including retail, wholesale, education, healthcare, insurance, banking, real estate, recreation, travelling, export and imports, etc. – and associated rates and taxes. The extent to which these benefits are likely to materialise will, however, hinge on the model adopted. If domestic labour legislation is waved and labour is imported *en masse* (as has happened elsewhere in Africa where large industrial developments have been driven by not only by foreign investors and foreign developers) these benefits will, in all likelihood, not materialise to the same extent. Contract procurement for professional services as well as all labour procurement contracts would have to be managed with extreme care. The development of resource and labour requirement plans, well in advance could ensure optimal alignment between skills requirements and domestic skills supply. Lessons from elsewhere in Africa furthermore indicates that overcoming the language barrier would be a noteworthy challenge. Considerable effort would have to be made by the foreign investors/developers to ensure alignment with the dominant domestic language profile.

Procurement of services and labour from the South African market would greatly enhance economic (and social) spin-off effects of the SEZ. Where gaps in the domestic economy might exist in terms of specialised supply side expertise, new business development and skills transfer should be of utmost importance. As far as possible, down-stream beneficiation and value adding of raw materials should be encouraged to prevent the export of “cheap”, un-beneficiated raw materials, only to be re-imported in an expensive, beneficiated state.

An onerous skills development burden should be imposed on the foreign operator to ensure compliance with local labour and related legislation. Skills development and empowerment across the spectrum of South African communities, including minority groups, should be actively promoted. The

use of foreign labour should be limited. Particular care should be taken during the operational phase to ensure that economic benefits are not eroded over time by systematically deteriorating environmental conditions – especially towards the end-of-life phase of mining and industrial plants. Proper decommissioning and rehabilitation plans should be timeously formulated. Stringent ongoing monitoring, evaluation and adjustment will be advisable.