

# LIMPOPO SPATIAL DEVELOPMENT FRAMEWORK Phase 2: Spatial Analysis Report

Part C: Socio-Economic Analysis

31 March 2023 *First Draft* The Office of the Premier

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The heartland of southern Africa - development is about people

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## **TABLE OF CONTENT**

3 Analy	sis of the socio-economic environment	11
3.1 De	mography	18
3.1.1	Background to statistical sources	18
3.1.2	Population and household characteristics	19
3.1.3	Population and household projections	28
3.1.4	Age and gender	30
3.1.5	Migration	33
3.2 Vu	Inerability	35
3.2.1	Poverty lines	35
3.2.2	Grant dependency	38
3.2.3	Child-headed households residing in inadequate dwellings	39
3.2.4	Level of education	40
5.2.5	Access to basic services	47
3.3 Ec	onomic trends	48
3.3.1	Economic context and performance	48
3.3.2	Labour and employment	59
3.3.3	Economic concentration and diversification	75
3.3.4	Competitive advantage	75
3.3.4.	1 Location quotient	70
5.5.4		19
3.4 Ec	onomic activities	87
3.4.1	Agriculture	87
3.4.1.	1 Industry analysis	88
3.4.1.	2 Enabling infrastructure	93
3.4.1.	3 Impact of COVID	93
3.4.1.	4 Development opportunities	93
3.4.Z	Mining	94
3.4.2.	2 Impact of COVID	100
3.4.2	3 Development opportunities	100
343	Industrial and manufacturing	102
343	1 Special economic zones (SE7s)	102
3.4.3	2 Industrial Parks Revitalisation Programme	.109
3.4.3	3 Impact of COVID	.111
3.4.3	4 Development opportunities	.112

3.4.4 Logistics (freight)11	12
3.4.4.1 Impact of COVID11	15
3.4.4.2 Development opportunities11	15
3.4.5 Tourism11	15
3.4.5.1 Tourism competitive advantage11	16
3.4.5.2 Culture and heritage11	17
3.4.5.3 Sport and wildlife11	18
3.4.5.2 Prioritised tourism routes11	19
3.5 Supportive infrastructure	20
3.5.1 Roads and transport12	20
3.5.1.1 Road network12	20
3.5.1.2 Rail network12	26
3.5.1.3 Aviation13	30
3.5.2 Water and sanitation13	32
3.5.2.1 Water services framework13	32
3.5.2.2 The source-to-tap-to-source principle	32
3.5.2.3 Demographic integration from a water services perspective 132	:
3.5.2.4 Population as basis for water services determination13	33
3.5.2.5 Domestic water supply services basis: Levels of services 13	35
3.5.2.6 Sanitation: Levels of service13	39
3.5.2.6.1 Sanitation infrastructure per district14	11
Capricorn district sanitation14	11
Mopani district sanitation14	12
Sekhukhune district sanitation14	12
Vhembe district sanitation14	13
Waterberg district sanitation	13
3.5.2.7 Water requirements14	14
3.5.2.7.1 Potable water	14 4 –
3.5.2.7.2 Agricultural water demand	+5 4 G
2.5.2.7.1 Elvestock water requirements	+0 16
3.5.2.7.1 Forestry water requirements	+0
3.5.2.7.2 Willing	+/ 1Q
3.5.2.8 Groundwater resource	+0 10
3.5.2.0 Surface water resource	52
3.5.2.0 Groundwater and surface water resource summary 15	55
3.5.2.11 Water resource and infrastructure balance for bulk supply	y
3.5.2.12 Operation and maintenance: Overview and MUSSA	
vulnerability	30

3.5.2.13 Operation and maintenance: Blue Drop evaluation	.164
3.5.2.14 Operation and maintenance: Green Drop evaluation	.166
3.5.2.15 Provincial Strategic projects and action list	.168
3.5.3 Electricity	.176
3.5.3.1 Eskom transmission network	.177
3.5.3.2 Power generation	.177
3.5.3.3 Load forecast	.177
3.5.3.4 Planned Eskom projects	.178
Medupi transmission integration (400 kV and 765 kV)	.178
Waterberg generation 400 kV stability enhancement	.178
Nzhelele 400 kV integration	.178
Strengthening of Limpopo East Corridor	.178
New Silimela substation	.178
New Sekhukhune substation	.178
3.5.3.5 Challenges	.180
3.5.3.6 Energy initiatives	.180
New coal	.182
Projects for future independent power producers	.182
MMSEZ A renewable energy plant	.182
Biomass, biogas and municipal waste	.182
Just Transition Framework	.182
3.5.3.7 Electrical service provision to priority development areas	182
3.5.4 Solid waste management	.185
3.5.5 Information and communication technology	.187
3.5.5.1 Access to cell phone	107
2.5.5.2 Access to Internet	100
2.5.5.3 Diodubaliu coverage	109
3.5.5.5 Strategic ICT projects	109
3.5.5.5.1 Musina_Makhado Special Economic Zone (MMSEZ)	
Strategic Plan 2021	100
3 5 5 5 2 Limpono Broadband Network Project	190
3 5 5 5 3 Digital hub centres	190
3 5 5 5 4 Limpopo Science and Technology Park	190
3.5.5.5.5 Provision of ICT resources in schools	.191
3.6 Key spatial issues and synthesis from the socio-	400
economic environment	192
3.6.1 Demography	.192
3.6.2 Vulnerability	.192

3.0.Z	vulnerability	. 192
3.6.3	Economic trends and activities	.193

3.6.4	Supportive Infrastructure19	4
Referenc	es19	8
Appendix	A: GVA constant prices	5
Appendix	KB: ESKOM network strengthening projects 20	8
Appendix	c C: Water balance per supply scheme area 20	9

## **TABLES**

TABLE 1:	KEY POPULATION AND HOUSEHOLD CHARACTERISTICS, 2021	.19
TABLE 2:	POPULATION AND HOUSEHOLD GROWTH TRENDS, 2016 TO 2021	.24
TABLE 3:	STATS SA MID-YEAR POPULATION ESTIMATES 2016 - 2031	.28
TABLE 4:	POPULATION AND HOUSEHOLD GROWTH ESTIMATES, 2021 TO 2031	29
TABLE 5:	LIMPOPO GENDER AND AGE STRUCTURE, 2021	.31
TABLE 6:	ESTIMATED PROVINCIAL MIGRATION STREAMS, 2016 TO 2021	.34
TABLE 7:	POVERTY INDICATORS: POPULATION UPPER-BOUND POVERTY LINE,	
2021	35	
TABLE 8:	ADULT EDUCATION LEVEL TRENDS – FUNCTIONAL ILLITERACY AND	
LITERA	CY RATES, 2016 TO 2021	.41
TABLE 9:	ADULT EDUCATION LEVELS - HIGHEST LEVEL OF EDUCATION	
ATTAIN	IMENT, 2021	.44
TABLE 10:	ECONOMIC CONTEXT AND PERFORMANCE, 2016 TO 2021	.50
TABLE 11:	INDUSTRY CONTRIBUTION TO TOTAL GVA (CURRENT PRICES), 20 53	21
TABLE 12:	FIVE-YEAR PERIOD INDUSTRY AVERAGE ANNUAL GROWTH (GVA	
CONST	ANT 2015 PRICES). 2016 TO 2021	.57
TABLE 13:	EMPLOYMENT TRENDS, 2016 TO 2021	.60
TABLE 14:	UNEMPLOYMENT TRENDS, 2016 TO 2021	.62
TABLE 15:	INDUSTRY CONTRIBUTION TO TOTAL EMPLOYMENT (FORMAL AND	
INFORM	лаL), 2021	.65
TABLE 16:	FIVE-YEAR PERIOD INDUSTRY AVERAGE ANNUAL GROWTH IN	
EMPLO	YMENT, 2016 то 2021	.73
TABLE 17:	INTERPRETATION OF LOCATION QUOTIENTS	.76
TABLE 18:	LOCATION QUOTIENT PER INDUSTRY, 2021	.77
TABLE 19:	COMPARATIVE ADVANTAGE ON A PROVINCIAL AND DISTRICT LEVEL,	
2021	79	
TABLE 20: L	EADING/LAGGING ANALYSIS AND INDUSTRY TARGETING	
CLASS	FICATION SYSTEM	.79
TABLE 21:	LIMPOPO - LEADING/LAGGING ANALYSIS AND INDUSTRY TARGETING	
CLASS	FICATION SYSTEM OUTCOME PER INDUSTRY AND SUB-INDUSTRY	.80
TABLE 22:	INDUSTRY TARGETING CLASSIFICATION SYSTEM OUTCOME PER	
INDUST	RY AND SUB-INDUSTRY AT PROVINCIAL AND DISTRICT LEVEL	.83
TABLE 23:	AGRICULTURE INDUSTRY AND SUB-INDUSTRY: INDUSTRY TARGETING	G
CLASS	IFICATION SYSTEM OUTCOME	.88
TABLE 24:	AGRICULTURE INDUSTRY AND SUB-INDUSTRY ECONOMIC CONTEXT	
AND PE	ERFORMANCE, 2016 TO 2021	.89
TABLE 25:	AGRICULTURE INDUSTRY AND SUB-INDUSTRY EMPLOYMENT AND	
COMPA	RATIVE ADVANTAGE, 2016 TO 2021	.91

TABLE 26:	MINING AND QUARRYING INDUSTRY AND SUB-INDUSTRY: INDUSTRY	
Targe	ETING CLASSIFICATION SYSTEM OUTCOME	.94
TABLE 27:	MINING AND QUARRYING INDUSTRY AND SUB-INDUSTRY ECONOMIC	
CONTE	EXT AND PERFORMANCE, 2016 TO 2021	.95
TABLE 28:	MINING AND QUARRYING INDUSTRY AND SUB-INDUSTRY EMPLOYME	NT
AND C	OMPARATIVE ADVANTAGE, 2016 TO 2021	.96
TABLE 29:	MANUFACTURING INDUSTRY AND SUB-INDUSTRY: INDUSTRY	
TARGE	TING CLASSIFICATION SYSTEM OUTCOME	103
TABLE 30:	MANUFACTURING INDUSTRY AND SUB-INDUSTRY ECONOMIC CONTE	хт,
2021	104	
TABLE 31:	MANUFACTURING INDUSTRY AND SUB-INDUSTRY EMPLOYMENT AND	
COMP	ARATIVE ADVANTAGE	106
TABLE 32:	LICENSED AERODROMES IN LIMPOPO	131
TABLE 33:	POPULATION COMPARISON LSDF TO LIMPOPO WATER MASTER PL	AN
	134	
TABLE 34:	SETTLEMENT CLASSIFICATION	135
TABLE 35:	HOUSEHOLD WATER SERVICE LEVELS PER WSA	136
TABLE 36:	SANITATION LEVELS OF SERVICE	139
TABLE 37:	POTABLE WATER	145
TABLE 38:	PROBABLE DEMAND FOR POTABLE WATER	145
TABLE 39:	AGRICULTURAL WATER DEMAND	145
TABLE 40:	LIVESTOCK WATER REQUIREMENT	146
TABLE 41:	FORESTRY WATER REQUIREMENTS	146
TABLE 42:	WATER REQUIREMENTS FOR THE MINING SECTOR	147
TABLE 43:	TOTAL WATER DEMAND PER SECTOR	148
TABLE 44:	RATIONALISED TOTAL GROUNDWATER FOR POTABLE USE	150
TABLE 45:	MAJOR DAMS IN LIMPOPO NORTH WMA	152
TABLE 46:	MAJOR DAMS IN OLIFANTS WMA, WITH YIELDS,	
ALLOC	ATIONS/DEMANDS AND TRANSFERS	154
TABLE 47:	RATIONALISED TOTAL SURFACE WATER FOR POTABLE USE	155
TABLE 48:	SUMMARISED GROUNDWATER SOURCE	155
TABLE 49:	ESTIMATED BULK INFRASTRUCTURE REFURBISHMENT BUDGET	
FOREC	CAST	160
TABLE 50:	MUNICIPAL STRATEGIC SELF-ASSESSMENT (MUSSA) SCORES PER	
MUNIC	PALITY	162
TABLE 51:	RISK PERFORMANCE TRENDS FOR LIMPOPO	164
TABLE 52:	BLUE DROP RISK RATINGS PER WSA FOR LIMPOPO	166
TABLE 53:	GREEN DROP SCORE PER WSA	168
I ABLE 54:	COMMENTS ON WATER SERVICES PROVISION TO THE SEZS AND	
PHSF	IDAs	169

TABLE 55:	MUNICIPALITIES WITH NERSA DISTRIBUTION LICENCES PER DIST	RICT
	170	
TABLE 56:	COMMENTS ON ELECTRICAL SERVICES PROVISION TO THE SEZS A	AND
PHSH	IDAs	183
TABLE 57:	SOLID WASTE LANDFILL SITE AND REMAINING CAPACITIES	186
TABLE 58:	HOUSEHOLDS' ACCESS TO THE INTERNET BY PLACE OF ACCESS,	
URBAN	I/RURAL STATUS, 2021	188

# **FIGURES**

FIGURE 1:	POPULATION DISTRIBUTION 2021	.21
FIGURE 2:	MUNICIPAL POPULATION DENSITY 2021	.22
FIGURE 3:	DISTRICT POPULATION GROWTH TREND 2016 TO 2021	.23
FIGURE 4:	KERNEL DENSITY OF OVERALL RESIDENTIAL STRUCTURE GROWTH	
	2015 то 2020	.25
FIGURE 5:	LIMPOPO POPULATION GROWTH IN NUMBERS 2016 TO 2021	.26
FIGURE 6:	LIMPOPO POPULATION AAGR 2016 TO 2021	.27
FIGURE 7:	POPULATION DISTRIBUTION OF SOUTH AFRICA AND LIMPOPO BY AGE	Ε,
	2021	.32
FIGURE 8:	LIMPOPO ESTIMATED PROVINCIAL MIGRATION STREAMS, 2016–2027 33	1
FIGURE 9:	PERCENTAGE OF POPULATION IN UPPER-BOUND POVERTY LINE, 202 37	21
FIGURE 10:	NUMBER OF SOCIAL GRANT PER GRANT TYPE, END OCTOBER 2022	.38
FIGURE 11:	CHILD-HEADED HOUSEHOLDS RESIDING IN INADEQUATE DWELLINGS,	,
	2016	.39
FIGURE 12:	ADULT EDUCATION: PERCENTAGE FUNCTIONALLY ILLITERATE ADULT 2021	s, .40
FIGURE 13:	NATIONAL, PROVINCIAL AND DISTRICT FUNCTIONAL ILLITERACY RATE	s,
	2016 AND 2021	.43
FIGURE 14:	LOCAL MUNICIPAL FUNCTIONAL ILLITERACY RATES, 2021	.43
FIGURE 15:	HIGHEST EDUCATION LEVEL ACHIEVED	.46
FIGURE 16:	ACCESS TO BASIC SERVICES SUMMARY	.47
FIGURE 17:	DISTRICT CONTRIBUTION TO LIMPOPO'S TOTAL ECONOMY (GVA	
	CURRENT PRICES 2021)	.49
FIGURE 18:	FIVE-YEAR PERIOD INDUSTRY AAGR 2016 - 2021	.52
FIGURE 19:	INDUSTRY CONTRIBUTION TO TOTAL GVA PER DISTRICT (CURRENT PRICES) IN 2021	56
FIGURE 20.	DISTRIBUTION OF TOTAL LINEMPLOYED PER LOCAL MUNICIPALITY IN	
	2021	63

FIGURE 21: UNEMPLOYMENT RATE PER LOCAL MUNICIPALITY IN 2021	64
FIGURE 22: TOTAL EMPLOYMENT IN AGRICULTURE INDUSTRY, 2016	67
FIGURE 23: TOTAL EMPLOYMENT IN AGRICULTURE INDUSTRY, 2021	68
FIGURE 24: DISTRIBUTION OF EMPLOYED IN MANUFACTURING INDUSTRY, 2016	69
FIGURE 25: DISTRIBUTION OF EMPLOYED IN MANUFACTURING INDUSTRY 2021.	70
FIGURE 26: DISTRIBUTION OF EMPLOYED IN MINING & QUARRYING INDUSTRY 20	)16
FIGURE 27: DISTRIBUTION OF EMPLOYED IN MINING & QUARRYING INDUSTRY	
2021Figure 19	72
FIGURE 28: ECONOMIC CONCENTRATION AND DIVERSIFICATION, TRESS INDEX	
2016 AND 2021	75
FIGURE 29: MUNICIPALITIES WITH HIGH DEPENDENCE (DOMINANCE) ON MINING	~ ~
	98
FIGURE 3U: MINING ACTIVITY AND CLUSTERS	101
FIGURE 31: FREIGHT CORRIDORS IN LIMPOPO	113
FIGURE 32: NORTH-SOUTH CORRIDOR.	113
FIGURE 33: CORE NETWORK SYSTEM	114
FIGURE 34: LIMPOPO'S COMPARATIVE ADVANTAGE IN TOURISM	110
FIGURE 35: CULTURE AND HERITAGE	117
FIGURE 30: SPORT & WILDLIFE TOURISM GLUSTER	110
FIGURE 37: TOURISM ROUTES AND PRIORITISED ROADS	119
FIGURE 30. LIMPOPU RUAD NEI WORK OWNERSHIP	121
	122
TIGURE 40. NOAD NETWORK LENGTH BY DISTRICT MUNICIPALITY AND SURFACE	102
	120
FIGURE 42: LIMPOPO LINDAVED ROAD CONDITION (SANDAL AND TAL)	124
FIGURE 43: LIMPOPO DALL NETWORK	120
FIGURE $44$ . TRANSNET'S LONG TERM CADACITY IMPROVEMENT DI ANS	120
FIGURE 45: WATER LISE CYCLE	132
FIGURE 46: LIMPOPO WATER SUPPLY INFRASTRUCTURE LEVEL OF SERVICE	136
FIGURE 47: WATER NEEDS PER SETTI EMENT 2013	137
FIGURE 48: WATER NEEDS PER CATEGORY 2013	137
FIGURE 49: SANITATION NEEDS PER SETTI EMENT, 2013	137
FIGURE 50: SANITATION NEEDS PER CATEGORY, 2013	137
FIGURE 51: LIMPOPO WATER SERVICE   EVELS, 2016	138
FIGURE 52: WASTEWATER TREATMENT WORKS	140
FIGURE 53: EXISTING SANITATION INFRASTRUCTURE IN CAPRICORN DISTRICT.	141
FIGURE 54: EXISTING SANITATION INFRASTRUCTURE IN MOPANI DISTRICT	142
FIGURE 55: EXISTING SANITATION INFRASTRUCTURE IN SEKHUKHUNE DISTRICT	_
142	

FIGURE 56: EXISTING SANITATION INFRASTRUCTURE IN VHEMBE DISTRICT 143
FIGURE 57: EXISTING SANITATION INFRASTRUCTURE IN WATERBERG DISTRICT 143
FIGURE 58: FACTORS CONSIDERED WHEN WATER DEMAND IS CALCULATED 144
FIGURE 59: LIMPOPO POTABLE WATER DEMAND 2021 TO 2031144
FIGURE 60: POTABLE WATER DEMAND PER DISTRICT IN 2021145
FIGURE 61: TOTAL WATER DEMAND PER SECTOR
FIGURE 62: AVERAGE BOREHOLE DEPTH PER DISTRICT MUNICIPALITY (M)149
FIGURE 63: AVERAGE BOREHOLE DEPTH PER DISTRICT MUNICIPALITY (M) 149
FIGURE 64: AVERAGE BOREHOLE YIELD PER DISTRICT MUNICIPALITY (KL/DAY)149
FIGURE 65: GROUNDWATER USE
FIGURE 66: WATER BALANCE: SUPPLY VERSUS DEMAND
FIGURE 67: CATCHMENT AREAS OF SOUTH AFRICA
FIGURE 68: CATCHMENT AREAS AGAINST THE MUNICIPAL BOUNDARIES
FIGURE 69: THE LIMPOPO NORTH WMA153
FIGURE 70: WATER BALANCE FOR DOMESTIC USE PER WATER SCHEME AREA156
FIGURE 71: WATER SOURCE INFRASTRUCTURE BALANCE (ML/D)157
FIGURE 72: MAJOR WATER RESOURCE TRANSFERS
FIGURE 73: WSA VULNERABILITY STATUS 2022
FIGURE 74: DESCRIPTION OF THE MUSSA SCORING
FIGURE 75: SETTLEMENTS AFFECTED BY SERIOUS FUNCTIONALITY ISSUES163
FIGURE 76: BLUE DROP RISK RATING
FIGURE 77: PERCENTAGE OF MUNICIPAL BDRR FOR EACH WSA IN LIMPOPO 165
FIGURE 78: BLUE DROP RISK RATING PER WSA165
FIGURE 79: GREEN DROP SCORE STATUS PER WSA
FIGURE 80: MAIN SUPPLY OF ELECTRICITY IN LIMPOPO, 2016
FIGURE 81: PERCENTAGE OF HOUSEHOLDS IN LIMPOPO WITH NO ACCESS TO
ELECTRICITY, 2016176
FIGURE 82: CURRENT LIMPOPO TRANSMISSION NETWORK
FIGURE 83: FUTURE LIMPOPO TRANSMISSION NETWORK
FIGURE 84: HYDROGEN VALLEY AND HYDROGEN HUBS
FIGURE 85: LANDFILL SITES
FIGURE 86: PERCENTAGE OF HOUSEHOLDS WITH FUNCTIONAL LANDLINE AND CELL
PHONES AT HOME BY PROVINCE IN 2021187
FIGURE 87: PERCENTAGE OF HOUSEHOLDS WITH ACCESS TO THE INTERNET AT
HOME, OR FOR WHICH AT LEAST ONE MEMBER HAS ACCESS TO OR
USES THE INTERNET PER PROVINCE FOR 2021188
FIGURE 88: BROADBAND NETWORK CONNECTED SITES IN LIMPOPO

ABBREVIATIONS		DGP	:	District Growth Point	
			DLRRD	:	Department of Land Reform and Rural Development (historical name)
Acronym Term		DM	:	District Municipality	
		Average Appual Growth Pate	DMRE	:	Department of Mineral Resources and Energy
	:	Agra Dragossing Masterplan	DoT	:	Department of Transport
	:	Agricultural Development Zenes	DPME	:	Department of Planning, Monitoring and Evaluation
	:	Agricultural Development Zones	DSAC	:	Department of Sport, Arts and Culture
	:	An Agricultural Holding established in forms of the Agricultural	DSI	:	Department of Science and Innovation
АП	•	Holdings Act 1919 (Act 22 of 1919)	DTI	:	Department of Trade and Industry
AI	:	Artificial Intelligence	DWA	:	Department of Water Affairs (historical name)
AIDA	:	Accelerated Industrial Development for Africa	DWS	:	Department of Water and Sanitation
AMV	:	African Mining Vision	EbA	:	Ecosystems based Adaptation
AU	:	African Union	EBSST	:	Electricity Basic Services Support Tariff
BEPP	:	Built Environment Performance Plan	ECD	:	Enterprise Creation for Development
BIAT	:	Boosting Intra-African Trade	EDF11	:	Economic Development Fund Programme 11
BBLU	:	Building Based Land Use	EPHP	:	Enhanced People's Housing Process
BDRR	:	Blue Drop Risk Rating	ESA	:	Ecological Support Area
CAADP	:	Comprehensive Africa Agricultural Development Programme	EU	:	European Union
СВО	:	Community-based Organisations	FEPAs	:	Freshwater Ecosystem Priority Areas
CDP	:	Cluster Development Programme	FLISP	:	Finance-Linked Individual Subsidy Programme
CIB	:	Central Innovation Belt	FLNG	:	Floating Liquefied Natural Gas
CIR	:	Capital Investment Framework	FOA	:	Food and Agriculture Organisation of the United Nations
CLN	:	Customer Load Network	FPL	:	Food Poverty Line
CRDP	:	Consolidated Rural Development Programme	FPSU	:	Farmer Production Support Unit
CSIR	:	Council for Scientific and Industrial Research	FTSEZ	:	Fetakgomo-Tubatse Special Economic Zone
CRU	:	Community Residential Units	GAAL	:	Gateway Airport Authority Limited
COGHSTA	:	Department of Cooperative Governance, Human Settlement	GDP	:	Gross Domestic Product
		and Traditional Affairs	GLeWAP	:	Groot Letaba Water Augmentation Project
CWP	:	Community Work Programme	GLTP	:	Greater Limpopo Transfrontier Park
DALRRD	:	Department of Agriculture, Land Reform and Rural	GSDF	:	Gauteng Provincial Spatial Development Framework
DCaC		Development	GTI	:	GeoTerralmage
DCOG	:	Department of Cooperative Governance	GVA	:	Gross Value Added
	:	District Development Model	HLEA	:	Highest Level of Education Attainment
	:	Department of Environmental Affairs (historical name)	HSDG	:	Human Settlements Development Grant
DEFF	•	Department of Environment, Forestry and Fisheries			

HSMP	:	Human Settlements Master Plan	LUMS	:	Land Use Management System
ICP	:	International Cooperating Partners	MEC	:	Member of Executive Council
ICT	:	Information and Communication technology	MIIF	:	Municipal Infrastructure Investment Framework
IDP	:	Municipal Integrated Development Plan	MGP	:	Municipal Growth Point
IDPF	:	Industrial Development Policy Framework	MMSEZ	:	Musina-Makhado Special Economic Zone
IDZ	:	Industrial Development Zone	MPSDF	:	Mpumalanga Provincial Spatial Development Framework
IGF	:	Intergovernmental Forum	MPT	:	Municipal Planning Tribunal
IGFRA	:	Intergovernmental Relations Framework Act	MSA	:	Municipal Systems Act
IPILRA	:	Interim Protection of Informal Land Rights Act, 1996	MTSF	:	Medium Term Strategic Framework
IPRP	:	Industrial Parks Revitalisation Programme	MuSSA	:	Municipal Strategic Self-Assessment
IRDP	:	Integrated Residential Development Programme	MYHSDP	:	Multi-Year Human Settlements Development Plan
IRP	:	Integrated Resource Plan	MYPE	:	Mid-Year Population Estimates
ISPH	:	Infrastructure Strategic Planning Hub	NAMP	:	National Airspace Master Plan
IT	:	Information Technology	NBA	:	National Biodiversity Assessment
ITMP	:	Integrated Transport Master Plan		:	National Biodiversity Framework
IUDF	:	Integrated Urban Development Framework	NBSAP	:	National Biodiversity Strategy and Action Plan
JMPT	:	Joint Municipal Planning Tribunal		:	National Development Plan
KNP	:	Kruger National Park		:	National Development of Public Works and Infrastructure
KPA	:	Key Performance Area		÷	National Department of Fublic Works and Initastructure
LBPL	:	Lower-Bound Poverty Line		:	Notional Economic Development and Labour Council
LDP	:	Limpopo Development Plan		÷	National Economic Development and Labour Council
LED	:	Local Economic Development		÷	New Partnership for Ainca's Development
LEDA	:	Local Economic Development Agency	NERSA	•	National Electricity Regulator of South Africa
LEDET	:	Limpopo Department of Economic Development, Environment	NGP	÷	New Growth Path
		and Tourism	NPAES	:	National Protected Area Expansion Strategy
LIIMP	:	Limpopo Integrated Infrastructure Master Plan	NRRA	÷	National Resource Risk Area
LIMCOM	:	Limpopo Watercourse Commission	NSAA	:	National Spatial Action Areas
LM	:	Local Municipality	NSC	:	North–South Corridor
LIMP	:	Limpopo Industrialisation Master Plan	NSDF	:	National Spatial Development Framework
LNP	:	Limpopo National Park	NSTETR	:	National Spatial Transformation and Economic Transition
LQ	:	Location Quotient			Region
LRB	:	Limpopo River Basin		·	
LSDF	:	Limpopo Spatial Development Framework		·	Onice of the Premier
LSP	:	Local Service Point		·	Provincial Development Planning Forum
LTGS	:	Limpopo Tourism Growth Strategy		:	Praumum Group of Metals
LTPF	:	Long Term Planning Framework	PGD5	:	Provincial Growth and Development Strategy

Limpopo Spatial Development Framework - Spatial Analysis

PGP	:	Provincial Growth Point	STR	:	Small Town Regeneration
PHP	:	People's Housing Programme	SWSA	:	Strategic Water Source Area
PHSHDAs	:	Priority Human Settlements and Housing Development Areas	TBVC	:	Transkei-Bophuthatswana-Venda and Ciskei states
PLTF	:	Provincial Land Transport Framework	TFCA	:	Transfrontier Conservation Area
RAAVC	:	Revitalisation of Agriculture and Agro-processing Value Chain	TRP	:	Title Restoration Programme
RAL	:	Roads Agency of Limpopo	UBPL	:	Upper-Bound Poverty Line
REDZ	:	Renewable Energy Development Zone	UISP	:	Upgrading of Informal Settlements Programme
RSA	:	Republic of South Africa	UK	:	United Kingdom
RSDF	:	Regional Spatial Development Framework	UN	:	United Nations
RISDP	:	Regional Indicative Strategic Development Plan	WHO	:	World Health Organisation
SADC	:	Southern African Development Community	WHS	:	World Heritage Site
SANBI	:	South African National Biodiversity Institute	WMA	:	Water Management Area
SANRAL	:	South African National Roads Agency SOC Ltd	WSA	:	Water Services Authorities
SAPP	:	Southern Africa Power Pool	WSDP	:	Water Service Development Plan
SEZ	:	Special Economic Zones	WSP	:	Water Service Provider
SIC	:	Standard Industrial Classification	WWTW	:	Wastewater Treatment Works
SIP	:	Strategic Integrated Projects	ZETDC	:	Zimbabwean Electricity Transmission and Distribution
SWSA		Strategic Water Source Area			Company
SACAD	:	South African Conservation Areas Database			
SADT	:	South African Development Trust			
SAMAC	:	Macadamias South Africa			
SAPAD	:	South African Protected Areas Database			
SDF	:	Spatial Development Framework			
SDG	:	Sustainable Development Goals			
SDI	:	Spatial Development Initiative			
SEA	:	Strategic Environmental Assessment			
SEZ	:	Special Economic Zone			
SIPs	:	Strategic Infrastructure Projects			
SLP	:	Social and Labour Plans			
SOPA	:	State of the Province Address			
SPLUMA	:	Spatial Planning and Land Use Management Act			
StatsSA	:	Statistics South Africa			
STISA	:	Science, Technology and Innovation Strategy for Africa			
STOSAR	:	Support Towards Operationalization of the SADC Regional Agricultural Policy			

## 3 Analysis of the socio-economic environment

A detailed spatial analysis of the provincial socio-economic is presented in this document. In terms of the LSDF, it is important to take a holistic view of spatial driving factors including demography, economic trends and main economic activities, as well as the enabling infrastructure. A comprehensive analysis of the status quo and current realities in terms of Limpopo's socioeconomic environment was undertaken with the particular focus on these driving factors as the overarching themes.

The following are among the key spatial issues that were identified:

- Population concentrations are found in both urban nodes such as Polokwane and Tzaneen, but also in rural settlements mainly in the eastern half of the province. Population growth and growth of residential structures are occurring in both urban nodes and rural settlements. The latter trend is reinforcing spatial disparities with growth occurring where communities are already socio-economically vulnerable and spatially marginalised. The highest socio-economic vulnerability in terms of poverty and other social measures occur in rural settlements.
- Limpopo experienced a low but positive economic growth rate from 2016 to 2021. Four industries showed a positive growth rate from 2016 to 2021, namely agriculture; mining and quarrying; finance, insurance, real estate and business services; and government and community services. The

province is highly reliant on the mining and quarrying sector, with the sector making a 31% contribution to provincial GVA in 2021. This reliance is also a vulnerability in some parts of the province, with five municipalities being predominantly mining dependent. Vulnerable municipalities with high population growth and/or single sector dependence were among those that experienced a decline or low growth in economic output from 2016-21.

 The province is experiencing challenges in terms of supportive infrastructure. Water sources are constrained with many areas facing a water deficit, which may be worsened due to climate change impacts. Sanitation services in all areas of the province are in a poor or critical state. Road conditions hamper access to certain nodes and rural areas, and combined with lack of rail capacity is a limiting factor in connectivity and freight transport. While most households do have access to electricity, the need for alternative energy supply projects are recognised and supported by various initiatives.

This document consists of the following sections:

- Demography
- Vulnerability
- Economic trends
- Economic activities
- Supportive infrastructure

## **POPULATION DISTRIBUTION**

## Limpopo Population: **5 907 136** 9,9% of SA



### Local Municipalities with largest populations:

- 1. Polokwane (12% of provincial population) 43,5% of Provincial
- 2. Thulamela (8,6% of provincial population)
- 3. Fetakgomo Tubatse (8,1% of provincial population)
- 4. Makhado (7,5% of provincial population)
- 5. Greater Tzaneen (7,3% of provincial population)

## **POPULATION GROWTH & PROJECTIONS**

### Local Municipalities with the largest 2031 Household Projections: increase in total numbers 2016 - 2021: 1. Sekhukhune DM (458 051, 23,4% increase) 1. Fetakgomo Tubatse 2. Waterberg DM (290 015, 20,3% increase) 2. Thulamela 3. Capricorn DM (505 426, 20,1% increase) 3. Polokwane 4. Mopani DM (429 150, 17,6% increase) 5. Vhembe DM (481 287, 17,6% increase) The highest annual average population growth rates can be found on the borders of the province, with Thabazimbi LM in the south-west with the highest growth rate **POPULATION GROWTH IN NUMBERS** 2016 - 2021 0 - 9 999 10 000 -19 999 24881 20 000 - 29 999 30 000+

21804



Population

### ANNUAL AVERAGE POPULATION GROWTH RATE 2016 - 2021

1.0 - 1.4%

/// 1,5 - 1,9%

2016 - 2021

**Highest Annual Average** 

**Population Growth Rate** 

### KERNEL DENSITY OF OVERALL RESIDENTIAL STRUCTURE GROWTH 2015 - 2020

440 158

750 421

Largest population

increase 2016 - 2021

— National Roads

Roads

507 894

431 014

479 503

2021 Population

0 - 99 999

500 000 +

100 000 - 199 999

200 000 - 299 999

300 000 - 399 999

400 000 - 499 999

Municipalities with largest Household growth 2016 - 2021



### VULNERABILITY

## 52% of people in Limpopo Province live in poverty

Sekhukhune (54,6%) and MopanI (53%) District Municipalities have the largest percentage of population living in poverty, with the following local municipalities reaching up to 60%:

- 1. Greater Giyani (62,8% of population)
- 2. Makhuduthamaga (60,2% of population)
- 3. Maruleng (60,1% of population)

District Municipalities	No access to safe drinking water	Uses pit latrine, bucket toilet, none, other	No access to municipal removal	No access to electricity
Capricorn	20%	<b>67</b> %	66%	3%
Mopani	24%	82%	84%	4%
Sekhukhune	38%	89%	90%	8%
Vhembe	19%	80%	82%	4%
Waterberg	24%	48%	52%	12%

## **ACCESS TO SERVICES**

CHILD HEADED HOUSEHOLDS RESIDING IN
INADEQUATE DWELLINGS 2016

All District Municipalities have relatively low

service levels, the lowest levels can be found

in the following District Municipalities:

Sekhukhune Mopani Vhembe



### PERCENTAGE FUNCTIONALLY ILLITERATE ADULTS

Illiterate Adults

National Roads

Roads

50% under the Poverty Line and

Overlap: Municipalities with >

more than 30% Functionally



**VULNERABILITY** 









The eastern part of Limpopo is experiencing higher levels of vulnerability, with an overlap of high poverty levels, illiteracy and low service levels

13



### UNEMPLOYMENT

Total number of employed declined by 113 503 from 2016 - 2021

Percentage of Total Labour Force employed:

 $66,3\% \mapsto 58,1\%_{2021}$ 

All District and Local Municipalities saw a decline in the number of employed 2016 - 2021:

District Municipalities with the largest decline are:

- Mopani DM (-33 543 / -3,1% decline per year)
- Vhembe DM (-30 436 or a -2,7% decline per year)
- Local Municipalities with the largest decline are:
- Greater Tzaneen LM (-15 826 / -3,5% per year)
- Polokwane LM (-12 593 / -1,4% per year)
- Makhado LM (-10 179 / -2,7% per year)

### LOCAL MUNICIPAL UNEMPLOYMENT RATE 2021



### INDUSTRY CONTRIBUTION TO TOTAL EMPLOYMENT (FORMAL AND INFORMAL) 2021



**STATISTICS** 

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis





• The functionality problems are not restricted to a specific area - it is a common problem throughout the province

17

## 3.1 Demography

The demography theme analysed the following indicators:

- Population and household characteristics
- Population growth
- Migration
- Spatial distribution of population

## 3.1.1 Background to statistical sources

The analysis of demography is reliant on credible sources, which has proven to be a challenge with the review of the LSDF 2016 and the following serves as the background to the data included in this report:

The latest official published sources that contain demographic data at a local level include the StatsSA Census 2011 and StatsSA Community Survey 2016. StatsSA conducted another population and household census in 2022, but its results will be available only in 2023. There are various sources of population and household indicators, all of them created through different approaches and methodologies to develop estimates and projections since the last official StatsSA Census publication. The result is a misalignment between population and household numbers and indicators. In the absence of the StatsSA 2022 data, the following data sources were consulted to develop a comprehensive demographic profile:

StatsSA 2022 Mid-Year Population Estimates (MYPE).<sup>1</sup> This publication provides data on district-level population group, gender and age estimates and projections for the period 2002 to 2032. This source was used to develop a population profile for the period 2016 to 2021, including age and gender structure and migration patterns. The local

municipal population was calculated based on proportional allocations per district as per Quantec Research Standardised Regional Data, Easy Data 2022.

Please note that 2022 MYPE does not include any findings from Census 2022. The results of Census 2022 will be released in 2023 and these will be incorporated into the 2024 MYPE. Consequently, no MYPE will be published in 2023.

- CSIR analysis of the GTI spatial data building based land use (BBLU) 2022 of residential structures. The GTI BBLU residential structure analysis was compared with other studies conducted in Limpopo, including various DWS water master plans, which counted residential structures on aerial images. This comparison revealed that the total number of households in the province is most likely significantly higher than indicated in StatsSA MYPE 2022 and other sources. Based on the CSIR analysis of the BBLU residential structures, the Limpopo household estimates were updated for 2016 and 2021, assuming that one household occupies one residential structure. Multiple households per residential structure were not considered. This data was also used as the basis for developing population and household growth projections for the period 2021 to 2031. This data was not used for national-level estimates.
- Quantec Research, Standardised Regional Data, Easy Data 2022. The Quantec data was used to develop a household and population profile on local (municipal) level. Proportional allocations were made to both household and population indicators not included in the StatsSA 2022 MYPE data to ensure alignment between population figures.

Throughout the analysis of the socio-economic environment, the relevant sources or combinations thereof, are clearly indicated. It is further emphasised that ideally, the figures should be updated upon release of the StatsSA census figures 2022 as an official source.

<sup>&</sup>lt;sup>1</sup> StatsSA MYPE 2022, Publication date: 28 July 2022. Available online: https://www.statssa.gov.za/?page\_id=1854&PPN=P0302&SCH=73305

## 3.1.2 Population and household characteristics

Table 1 provides an overview of the population and household characteristics of Limpopo at a provincial, district and local municipal level. The following indicators for 2021 are included in the table:

- Geographic area in square kilometres
- Total population estimated for 2021
- Contribution of the district and local municipalities to the total population of Limpopo
- Population density as people per square kilometre

### Table 1: Key population and household characteristics, 2021

- Total number of households estimated for 2021
- Contribution of the district and local municipalities to the total geographical area of Limpopo
- Average household size
- Household density

The indicators are derived from own calculations that are based on StatsSA MYPE 2022, Quantec Standardised Regional Data, Easy Data 2022 and CSIR 2022 GTI building data: Residential structures, as discussed in Section 3.1.1

			Population		Household					
Area	Geographical area (km²)	Total estimated population 2021	Contribution to provincial population total	Population density (people per km²)	Total estimated number of households 2021	Contribution to provincial total number of households	Average household size	Household density (number of households per km²)		
South Africa	1,219,602	59,964,917		49.2	6,684,205		3.2	15.2		
Limpopo Province	125,806	5,907,136	9.9% to national	47.0	1,807,443	9.7% to national	3.3	14.4		
Capricorn District	21,707	1,312,556	22.2%	60.5	420,870	23.3%	3.1	19.4		
Blouberg	9,540	185,518	3.1%	19.4	65,410	3.6%	2.8	6.9		
Lepelle-Nkumpi	3,485	244,920	4.1%	70.3	84,666	4.7%	2.9	24.3		
Molemole	3,628	131,696	2.2%	36.3	42,768	2.4%	3.1	11.8		
Polokwane	5,054	750,421	12.7%	148.5	228,026	12.6%	3.3	45.1		
Mopani District	20,029	1,201,616	20.3%	60.0	365,076	20.2%	3.3	18.2		
Ba-Phalaborwa	7,499	164,246	2.8%	21.9	53,180	2.9%	3.1	7.1		
Greater Giyani	4,171	263,033	4.5%	63.1	83,614	4.6%	3.1	20.0		
Greater Letaba	1,897	238,691	4.0%	125.8	67,088	3.7%	3.6	35.4		
Greater Tzaneen	2,897	431,014	7.3%	148.8	126,695	7.0%	3.4	43.7		
Maruleng	3,566	104,632	1.8%	29.3	34,499	1.9%	3.0	9.7		
Sekhukhune District	13,531	1,207,145	20.4%	89.2	371,186	20.5%	3.3	27.4		
Elias Motsoaledi	3,714	278,770	4.7%	75.1	86,100	4.8%	3.2	23.2		

Limpopo Spatial Development Framework - Spatial Analysis

		Population			Household				
Area	Geographical area (km²)	Total estimated population 2021	Contribution to provincial population total	Population density (people per km²)	Total estimated number of households 2021	Contribution to provincial total number of households	Average household size	Household density (number of households per km²)	
Ephraim Mogale	2,011	139,940	2.4%	69.6	40,199	2.2%	3.5	20.0	
Fetakgomo Tubatse	5,696	479,503	8.1%	84.2	150,394	8.3%	3.2	26.4	
Makhuduthamaga	2,110	308,932	5.2%	146.4	94,493	5.2%	3.3	44.8	
Vhembe District	25,609	1,432,621	24.3%	55.9	409,156	22.6%	3.5	16.0	
Collins Chabane	5,008	372,728	6.3%	74.4	112,433	6.2%	3.3	22.4	
Makhado	7,606	440,158	7.5%	57.9	123,273	6.8%	3.6	16.2	
Musina	10,351	111,842	1.9%	10.8	32,739	1.8%	3.4	3.2	
Thulamela	2,643	507,894	8.6%	192.1	140,711	7.8%	3.6	53.2	
Waterberg District	44,930	753,198	12.8%	16.8	241,155	13.3%	3.1	5.4	
Bela-Bela	3,407	71,196	1.2%	20.9	22,768	1.3%	3.1	6.7	
Lephalale	13,799	118,420	2.0%	8.6	44,764	2.5%	2.6	3.2	
Modimolle-Mookgopong	10,368	116,285	2.0%	11.2	38,193	2.1%	3.0	3.7	
Mogalakwena	6,156	343,047	5.8%	55.7	106,189	5.9%	3.2	17.2	
Thabazimbi	11,200	104,249	1.8%	9.3	29,241	1.6%	3.6	2.6	

Own calculations based on StatsSA MYPE 2022, Quantec Standardised Regional Data, Easy Data 2022 and CSIR 2022 GTI building data: Residential structures.

In 2021, Limpopo had an estimated total population of 5,907,136, which constitutes 9.9% of the national population. The largest component of the population is concentrated in the Vhembe and Capricorn districts, which respectively contribute 24.1% and 22.6% to the total population of the province.

At a local municipal level, the largest concentrations of population are found in the following municipalities, as shown in Figure 1:

- Polokwane (750,421)
- Thulamela (507,894)
- Fetakgomo Tubatse (479,503)
- Makhado (440,158)
- Greater Tzaneen (431,014)

In 2021, there were an estimated total of 1,807,443 households in Limpopo. The average number of people per household or average household size in the province is 3.3, which is slightly higher than the national average of 3.2 people per household. There was also a decline from 2016 when the number of people per household were 3.62 according to the StatsSA Community Survey 2016.

At a district level, Vhembe has the largest average household size at 3.6 people per household and Capricorn and Waterberg the smallest at 3.1 people per household.



Figure 1: Population distribution 2021

Population density is indicative of geographic clusters of activity at a larger scale. The population density for Limpopo was 43% in 2016 and it has increased to 47 people per square kilometre for 2021, as indicated in Table 1.

The population density is slightly lower than the population density for South Africa, which is 49.2 people per square kilometre.

At a district level, Sekhukhune has the highest population density at 89.2 people per square kilometre and Waterberg the lowest population density, at 16.8 people per square kilometre.

Figure 2 shows the population density 2021 on municipal level. The population density is the highest in Thulamela, followed by Polokwane, Greater Tzaneen and Makhuduthamaga. These municipalities were also noted as municipalities with high population numbers.



Figure 2: Municipal population density 2021

It is prudent to analyse the change in the population and household characteristics since 2016 to inform the review of the LSDF proposals. The population and household growth trends for the five-year period 2016 to 2021 are depicted in Table 2, Figure 3 to Figure 6.

Over the five-year period 2016 to 2021, Limpopo's population increased at an average rate of 0.8% per annum (an increase of approximately 240,566 people), which is lower than the national average annual rate of 1.4% per annum. Vhembe and Sekhukhune districts stand out as the two districts that had the highest growth in population numbers (approximately 68,000 and 63,000 people respectively) and their average annual growth rate is higher than the provincial average (1,0% and 1,1% respectively).

At a local municipal level, Thabazimbi is the only local municipality with a population growth rate of 1,6% which is higher than both the provincial and national rate. The local municipalities that experienced the most significant growth in population numbers were the following:

- Fetakgomo Tubatse (30,255 people)
- Thulamela (24,881 people)
- Polokwane (21,804 people)

Over the same period, the number of households in Limpopo increased at an average rate of 1.9% per annum (an increase of 161,798 households). Contrary to the provincial population growth rate, the household growth rate is higher than the national average rate of 1.6% per annum. There are also several local municipalities that experienced significant household growth rates higher than both the provincial and national average. These are Musina (3.2%), Lephalale (3.0%), Blouberg (2.6%), Makhuduthamaga (2.6%) and Maruleng (2.4%). It needs to be noted that the rate is from a relative small household base number.

Comparing it to the growth in household numbers, the following local municipalities are highlighted as those that experienced the highest household growth trend from 2016 to 2021:

- Polokwane (19,948 households)
- Fetakgomo Tubatse (17,486 households)
- Makhuduthamaga (11,497 households)



Figure 3: District population growth trend 2016 to 2021

Area	Population 2016	Population 2021	Population growth in numbers 2016 to 2021	Population AAGR 2016 to 2021	Households 2016	Households 2021	Household growth in numbers 2016 to 2021	Household AAGR 2016 to 2021
South Africa	56,020,148	59,964,917	3,944,769	1.4%	15,382,014	16,684,205	1,302,190	1.6%
Limpopo Province	5,666,570	5,907,136	240,566	0.8%	1,645,645	1,807,443	161,798	1.9%
Capricorn District	1,281,216	1,312,556	31,340	0.5%	382,396	420,870	38,474	1.9%
Blouberg	184,087	185,518	1,431	0.2%	57,487	65,410	7,923	2.6%
Lepelle-Nkumpi	238,393	244,920	6,527	0.5%	77,651	84,666	7,015	1.7%
Molemole	130,118	131,696	1,578	0.2%	39,180	42,768	3,588	1.8%
Polokwane	728,617	750,421	21,804	0.6%	208,078	228,026	19,948	1.8%
Mopani District	1,157,455	1,201,616	44,161	0.8%	335,498	365,076	29,578	1.7%
Ba-Phalaborwa	155,231	164,246	9,015	1.1%	47,937	53,180	5,243	2.1%
Greater Giyani	251,339	263,033	11,695	0.9%	76,262	83,614	7,352	1.9%
Greater Letaba	231,192	238,691	7,499	0.6%	62,880	67,088	4,208	1.3%
Greater Tzaneen	418,153	431,014	12,860	0.6%	117,841	126,695	8,854	1.5%
Maruleng	101,540	104,632	3,092	0.6%	30,578	34,499	3,921	2.4%
Sekhukhune District	1,143,852	1,207,145	63,293	1.1%	332,615	371,186	38,571	2.2%
Elias Motsoaledi	265,825	278,770	12,945	1.0%	79,762	86,100	6,338	1.5%
Ephraim Mogale	134,703	139,940	5,237	0.8%	36,949	40,199	3,250	1.7%
Fetakgomo Tubatse	449,248	479,503	30,255	1.3%	132,908	150,394	17,486	2.5%
Makhuduthamaga	294,076	308,932	14,856	1.0%	82,996	94,493	11,497	2.6%
Vhembe District	1,364,219	1,432,621	68,402	1.0%	376,035	409,156	33,121	1.7%
Collins Chabane	355,592	372,728	17,136	0.9%	102,162	112,433	10,271	1.9%
Makhado	420,758	440,158	19,399	0.9%	114,070	123,273	9,203	1.6%
Musina	104,856	111,842	6,985	1.3%	27,984	32,739	4,755	3.2%
Thulamela	483,013	507,894	24,881	1.0%	131,819	140,711	8,892	1.3%
Waterberg District	719,828	753,198	33,370	0.9%	219,101	241,155	22,054	1.9%
Bela-Bela	68,951	71,196	2,245	0.6%	21,188	22,768	1,580	1.4%
Lephalale	111,802	118,420	6,618	1.2%	38,522	44,764	6,242	3.0%

## Table 2:Population and household growth trends, 2016 to 2021

Area	Population 2016	Population 2021	Population growth in numbers 2016 to 2021	Population AAGR 2016 to 2021	Households 2016	Households 2021	Household growth in numbers 2016 to 2021	Household AAGR 2016 to 2021
Modimolle-Mookgopong	114,570	116,285	1,716	0.3%	34,926	38,193	3,267	1.8%
Mogalakwena	328,161	343,047	14,886	0.9%	97,517	106,189	8,672	1.7%
Thabazimbi	96,344	104,249	7,905	1.6%	26,948	29,241	2,293	1.6%

Own calculations based on StatsSA MYPE 2022, Quantec Standardised Regional Data, Easy Data 2022 and CSIR 2022 GTI building data: Residential structures.

The spatial representation of the growth in households is showed in the kernel density map of residential structure growth analysed by the CSIR for the period 2015 - 2020. The trends that have emerged over the last few years clearly show that the household growth concentrated around certain areas, in particular Seshego/ Polokwane/ Mankweng, Burgersfort/ Steelpoort and along the R37, at Lenyenye/ Nkowankowa, Namakgale/ Lulekani, Jane Furse, Lebowakgomo and the Thohoyandou area. There is also a concentration at Senwabarwana, Lephalale and Modimolle.

The figure also shows higher growth towards Northam compared to Thabazimbi. The growth in Makhado seems to be in areas outside of the formal town. The growth pattern in Mogalakwena clearly follows the N11 north of Mokopane towards the mining activity and the surrounding settlements.



Figure 4: Kernel density of overall residential structure growth 2015 to 2020



Figure 5: Limpopo population growth in numbers 2016 to 2021



### Figure 6: Limpopo population AAGR 2016 to 2021

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

## 3.1.3 Population and household projections

Every year, StatsSA publishes mid-year population estimates, which include population and household growth projections for the next ten year period. To produce the estimates every year, StatsSA uses a cohort-component method. In the cohort-component method, a base population that is consistent with known demographic characteristics of the country is used. That population is then projected into the future according to the projected components of change. Selected levels of fertility, mortality and migration are used as input.

However, although migration is considered in the cohort-component method, economic factors that motivate migration are not. The weakness is that the

Table 3 on provincial and district level. The population figures are shown with the official 2016 StatsSA community survey as baseline, and projected by StatsSA for 2031. According to the MYPE, the Limpopo population will

mid-year population estimates do not adequately reflect the effect of factors that may be linked to employment in labour-intensive industries such as agriculture, mining and manufacturing, all of which are focus industries of the province, or planned economic investments such as the SEZs or mine expansion. Another weakness is the time span since the 2011 census, resulting in various projections to show contradicting figures, especially on municipal level. However, as the official source, the Limpopo population estimates according to StatsSA's 2022 Mid-Year Population Estimates (MYPE) are indicated in

increase to 6,237,430 people in 2031 at an average annual growth rate of 0,7%.

### Table 3: Stats SA Mid-year population estimates 2016 - 2031

Area	Population 2016 (MYPE)	Population growth 2016 - 2026	Population 2026 (MYPE)	Population growth 2026-2031	Population 2031 (MYPE)	Estimated population AAGR (2016 to 2031)
Limpopo Province	5,689,473	409,049	6,098,523	138,907	6,237,430	0.7%
Capricorn District	1,293,499	48,511	1,342,009	3,275	1,345,284	0.4%
Mopani District	1,158,424	77,441	1,235,864	22,250	1,258,114	0.6%
Sekhukhune District	1,153,719	122,770	1,276,489	55,881	1,332,370	1.0%
Vhembe District	1,364,452	108,775	1,473,227	30,244	1,503,472	0.8%
Waterberg District	719,379	51,553	770,932	27,258	798,190	0.7%

Source: StatsSA MYPHE, 2022

There is more confidence in the household figures estimated for 2021 due to the sources available, and as a result, the ten-year projection of households for the province are provided on district and local municipality level in Table 4. The household estimates are based on Quantec Standardised Regional Data, the estimated household average annual growth rates from the StatsSA 2022 mid-year population estimates and CSIR 2022 GTI building data: Residential structures.

According to the projections, the Limpopo household numbers are estimated to increase with 356,486 households (average annual growth rate of 1.8%), from 1,807,443 (2021) to 2,163,929 (2031).

Table 4:	Population and	household growth	estimates, 2021 to 2031
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Area	Households 2021	Households 2031 (estimated)	Estimated growth in household numbers (2021 to 2031)	Estimated household AAGR (2021 to 2031)
Limpopo Province	1,807,443	2,163,929	356,486	1.8%
Capricorn District	420,870	505,426	84,556	1.8%
Blouberg	65,410	83,639	18,229	2.5%
Lepelle-Nkumpi	84,666	99,819	15,153	1.7%
Molemole	42,768	50,531	7,763	1.7%
Polokwane	228,026	271,437	43,411	1.8%
Mopani District	365,076	429,150	64,074	1.6%
Ba-Phalaborwa	53,180	64,798	11,618	2.0%
Greater Giyani	83,614	99,625	16,011	1.8%
Greater Letaba	67,088	75,891	8,803	1.2%
Greater Tzaneen	126,695	145,428	18,733	1.4%
Maruleng	34,499	43,408	8,909	2.3%

Area	Households 2021	Households 2031 (estimated)	Estimated growth in household numbers (2021 to 2031)	Estimated household AAGR (2021 to 2031)
Sekhukhune District	371,186	458,051	86,865	2.1%
Elias Motsoaledi	86,100	99,589	13,489	1.5%
Ephraim Mogale	40,199	47,196	6,997	1.6%
Fetakgomo Tubatse	150,394	190,297	39,903	2.4%
Makhuduthamaga	94,493	120,969	26,476	2.5%
Vhembe District	409,156	481,287	72,131	1.6%
Collins Chabane	112,433	134,926	22,493	1.8%
Makhado	123,273	142,892	19,619	1.5%
Musina	32,739	44,142	11,403	3.0%
Thulamela	140,711	159,327	18,616	1.3%
Waterberg District	241,155	290,015	48,860	1.9%
Bela-Bela	22,768	26,108	3,340	1.4%
Lephalale	44,764	59,582	14,818	2.9%
Modimolle- Mookgopong	38,193	45,280	7,087	1.7%
Mogalakwena	106,189	124,885	18,696	1.6%
Thabazimbi	29,241	34,159	4,918	1.6%

Source: Own calculations based on StatsSA MYPE 2022, Quantec Standardised Regional Data, Easy Data 2022 and CSIR 2022 GTI building data: Residential structures.

Part C: Socio-Economic Analysis

The largest estimated growth in household numbers is anticipated in the following local municipalities:

- Polokwane (43,411)
- Fetakgomo Tubatse (39,903)
- Makhuduthamaga (26,476)

The population and household estimates, especially on local municipal level, remain a high level estimation and needs to be reviewed upon release of the new StatsSA census 2023.

## 3.1.4 Age and gender

The age and gender composition of a population have a direct influence on the socio-economic conditions and spatial needs in an area. The age and gender characteristics of the Limpopo population is depicted in Table 5.

The gender composition indicates that in both the national population and Limpopo's provincial population, there are slightly more females than males. This is also the overall trend throughout the province, with the exception of the Waterberg district and the following local municipalities:

- Thabazimbi (60.6% males vs 39.4% females)
- Lephalale (56.3% males vs 43.7% females)
- Musina (50.7% males vs 49.3% females)
- Modimolle-Mookgopong (50.2% males vs 49.8% females)

The age cohorts in Table 5 are structured as follow:

- Child: Ages 0 to 14 years
- Youth: Ages 15 to 34 years
- Adult: Ages 35 to 64 years
- Elderly: Ages 65 years or older

Figure 7 compares the national and provincial age cohorts in a detail age structure. It is clear from the age structure that Limpopo has a bottom-heavy age structure with nearly half of its total population (43.5%) between the ages of 0 to 19 year.

Compared to the age cohorts for South Africa as a whole, a more significant portion of Limpopo's population fall in the 0 to 19 years age cohorts, while the opposite is evident for the age cohorts 20 years to 39 years. This underscores the likelihood of out-migration (see Table 6), mostly when the 20 years plus cohort migrates for education and job opportunities and local households are left with a high portion of dependents. Dependent categories, which include children (aged 0 to 14) and the elderly (aged 65 or older), are those categories that depend on the population that is of working age (the youth and adult population, aged 15 to 64 years). The following local municipalities have the highest portion of working age (and lowest economically dependent) populations:

- Thabazimbi (77.8%)
- Lephalale (70.3%)
- Musina (65.3%)
- Fetakgomo Tubatse (63.0%)

There are correlations between the male dominant gender structure and the municipalities with the highest portion of working age populations namely Thabazimbi and Lephalale. There is also a correlation with the very low elderly population in these municipalities. The trend observed is typical from a mining or industry dominated area where the economically active labour force migrates to the area during their working age, but return to their place of origin to retire.

The opposite trend is found in certain rural areas such as Blouberg, Lepelle-Nkumpi and Molemole. The economic dependent population almost equal the working area population, and the elderly age group is higher. The female population is also a larger segment than males. This trend shows the elderly retiring at their place of origin, and women staying at home to care for dependents.

## Table 5: Limpopo gender and age structure, 2021

	Ger	nder		Age st	ructure	Working-age	Economically	Children/Youth 0 to 19 years	
Area	Female population	Female Male opulation population		Youth (15 to 34 years)	Adult (35 to 64 years)	Elderly (65 or older)	population (Youth and Adults – ages 15 to 64 years)		dependent population (Children and Elderly)
South Africa	51.6%	48.4%	31.6%	33.6%	28.6%	6.2%	62.2%	37.8%	40.5%
Limpopo Province	52.6%	47.4%	34.0%	31.9%	27.7%	6.3%	59.6%	40.4%	43.5%
Capricorn District	52.9%	47.1%	34.4%	30.7%	27.2%	7.7%	57.9%	42.1%	44.2%
Blouberg	54.7%	45.3%	41.4%	26.8%	22.2%	9.7%	48.9%	51.1%	53.1%
Lepelle-Nkumpi	54.9%	45.1%	39.3%	25.4%	25.0%	10.2%	50.5%	49.5%	50.6%
Molemole	54.8%	45.2%	37.4%	25.8%	26.7%	10.0%	52.6%	47.4%	47.2%
Polokwane	51.8%	48.2%	31.5%	33.5%	28.7%	6.4%	62.1%	37.9%	40.8%
Mopani District	53.0%	47.0%	34.2%	31.6%	28.2%	5.9%	59.8%	40.2%	43.8%
Ba-Phalaborwa	51.1%	48.9%	35.3%	32.1%	28.1%	4.5%	60.2%	39.8%	42.9%
Greater Giyani	55.2%	44.8%	37.5%	31.0%	25.0%	6.5%	56.0%	44.0%	48.6%
Greater Letaba	53.9%	46.1%	34.1%	32.1%	26.3%	7.5%	58.4%	41.6%	45.5%
Greater Tzaneen	51.9%	48.1%	31.8%	31.5%	31.1%	5.6%	62.6%	37.4%	40.5%
Maruleng	53.1%	46.9%	34.4%	32.1%	28.5%	4.9%	60.6%	39.4%	43.8%
Sekhukhune District	52.8%	47.2%	35.9%	34.2%	24.6%	5.4%	58.7%	41.3%	45.6%
Elias Motsoaledi	53.5%	46.5%	38.0%	32.5%	23.9%	5.6%	56.4%	43.6%	48.5%
Ephraim Mogale	52.8%	47.2%	36.9%	33.1%	24.4%	5.6%	57.5%	42.5%	46.9%
Fetakgomo Tubatse	50.5%	49.5%	32.7%	37.6%	25.4%	4.3%	63.0%	37.0%	41.4%
Makhuduthamaga	56.3%	43.7%	39.4%	29.9%	23.5%	7.2%	53.4%	46.6%	50.1%
Vhembe District	53.5%	46.5%	34.1%	32.1%	28.0%	5.7%	60.2%	39.8%	43.8%
Collins Chabane	56.2%	43.8%	37.3%	30.5%	25.4%	6.8%	55.8%	44.2%	47.9%
Makhado	52.3%	47.7%	33.6%	30.4%	29.7%	6.3%	60.1%	39.9%	42.7%
Musina	49.3%	50.7%	31.7%	38.8%	26.6%	3.0%	65.3%	34.7%	39.5%
Thulamela	53.8%	46.2%	32.9%	32.9%	29.0%	5.2%	61.9%	38.1%	43.1%
Waterberg District	49.2%	50.8%	30.1%	30.6%	32.3%	7.1%	62.9%	37.1%	37.9%
Bela-Bela	50.7%	49.3%	30.1%	29.0%	33.3%	7.6%	62.3%	37.7%	37.6%
Lephalale	43.7%	56.3%	25.1%	37.4%	32.9%	4.6%	70.3%	29.7%	32.0%

Part C: Socio-Economic Analysis

	Ger	nder		Age st	ructure	Working-age	Economically		
Area	Female population	Male population	Child (0 to 14 years)	Youth (15 to 34 years)	Adult (35 to 64 years)	Elderly (65 or older)	(Youth and Adults – ages 15 to 64 years)	population (Children and Elderly)	Children/Youth 0 to 19 years
Modimolle-Mookgopong	49.8%	50.2%	32.0%	31.3%	30.5%	6.2%	61.8%	38.2%	39.3%
Mogalakwena	54.7%	45.3%	35.1%	25.6%	29.1%	10.2%	54.7%	45.3%	44.9%
Thabazimbi	39.4%	60.6%	20.0%	35.6%	42.2%	2.2%	77.8%	22.2%	24.6%

Source: Own calculations based on StatsSA MYPE 2021 and 2022





Own calculations based on StatsSA MYPE 2021 and 2022

## 3.1.5 Migration

The StatsSA 2022 Mid-year population estimates (MYPE) are the latest source of migration data available. The migration estimates are only at a provincial level.

Historical data analysed for the period 2016 to 2021 and included in Table 6 indicates that Limpopo experienced a negative net migration of -187,356 people (in-migration less out-migration) in that period.

Figure 8 summarises the provincial migration streams of Limpopo. A total of 468,149 people migrated out of the province over the period 2016 to 2021. The largest portion of people migrated to Gauteng (75.5%), Mpumalanga (10.4%) and the North West (7.1%).

Of the 280,793 people who migrated to Limpopo during this period, the most significant portion of people were from Gauteng (37%) or outside of South Africa (32.8%).





Source: StatsSA Mid-Year Population Estimates (MYPE), 2022

### Table 6: Estimated provincial migration streams, 2016 to 2021

Province in 2016	Province in 2021												
	EC	FS	GP	KZN	LIN	1	MP	NC	NW	wc	Out-migrants	In-migrants	Net migration
Eastern Cape (EC)	0	13,111	146,972	98,810	14,087	5.0%	16,900	8,130	37,856	175,892	511,757	192,412	-319,345
Free State (FS)	8,561	0	83,352	7,981	6,653	2.4%	10,948	9,215	24,137	12,390	163,237	134,719	-28,517
Gauteng (GP)	52,240	40,607	0	70,611	103,774	37.0%	83,059	12,678	111,642	98,742	573,354	1,559,881	986,527
KwaZulu-Natal (KZN)	26,145	12,657	230,144	0	9,819	3.5%	37,693	8,834	12,014	34,307	371,614	288,533	-83,081
Limpopo (LIM)	4,580	5,937	353,514	8,415	0	-	48,472	2,649	33,017	11,564	468,149	280,793	-187,356
	1.0%	1.3%	75.5%	1.8%	-	-	10.4%	0.6%	7.1%	2.5%			
Mpumalanga (MP)	5,315	5,494	141,862	13,311	24,664	8.8%	0	2,446	14,130	10,308	217,531	282,740	65,208
Northern Cape (NC)	4,582	9,226	17,372	5,882	2,756	1.0%	4,668	0	13,209	18,936	76,632	88,320	11,688
North West (NW)	5,423	12,311	113,111	6,377	20,785	7.4%	12,423	24,660	0	9,528	204,618	320,161	115,543
Western Cape (WC)	53,601	8,451	65,638	13,846	6,115	2.2%	7,680	13,493	8,834	0	177,658	469,984	292,325
Outside SA (net migration)	31,965	26,925	407,915	63,299	92,140	32.8%	60,896	6,214	65,320	98,317			

Source: StatsSA Mid-Year Population Estimates (MYPE), 2022

## 3.2 Vulnerability

The vulnerability indicators that are analysed in this section, need to inform the assessment of the spatial distribution of households in vulnerable circumstances. The indicators that are assessed include poverty lines, grant dependency, child headed households residing in inadequate housing, level of education and access to basic services.

The overall weakness in the evaluation of poverty and vulnerability, is the lack of updated and recent statistical data, which gap will be filled once StatsSA Census 2022 is released.

## 3.2.1 Poverty lines

The only official data on household income is StatsSA Census, 2011 according to which 76.4% of the Limpopo population earn below R3,200 per month.

Statistics South Africa followed an internationally recognised approach, the cost-of-basic-needs approach, to produce three poverty lines:

- Food poverty line
- Lower-bound poverty line
- Upper-bound poverty line

Through these lines, it is possible to capture different degrees of poverty and to measure and monitor poverty at different levels. The lines contain both food and non-food components of household consumption expenditure.

The inflation-adjusted national poverty lines for 2021 (per person per month in rand) are as follows:<sup>2</sup>

• Food poverty line (FPL): R624 (in April 2021 prices) per person per month. This refers to the amount of money that an individual needs to

afford the minimum required daily energy intake. This is also commonly referred to as the "extreme" poverty line.

- Lower-bound poverty line (LBPL): R890 (in April 2021 prices) per person per month. This refers to the food poverty line plus the average amount derived from non-food items of households whose total expenditure is equal to the food poverty line. People who live at or below the LBPL do not have command over enough resources to purchase or consume both adequate food and non-food items and are therefore forced to sacrifice food to obtain essential non-food items.
- Upper-bound poverty line (UBPL): R1,335 (in April 2021 prices) per person per month. This refers to the food poverty line plus the average amount derived from non-food items of households whose food expenditure is equal to the food poverty line. People who live at the UBPL can purchase adequate levels of both food and non-food items.

Table 7 display the UBPL for 2021 and the percentage of the population per local municipality within the UBPL is spatially represented in Figure 9.

Table 7: Poverty indicators: Population upper-bound poverty line, 2021

	Upper-bound poverty line: Population							
Area	Poverty headcount under UBPL (Number of persons) 2021	UBPL Poverty headcount index (Percentage of population) 2021						
South Africa	30,699,836	51.2%						
Limpopo Province	3,048,665	51.6%						
Capricorn District	652,748	49.7%						
Blouberg	97,180	52.4%						
Lepelle-Nkumpi	133,056	54.3%						
Molemole	60,874	46.2%						
Polokwane	361,638	48.2%						

<sup>&</sup>lt;sup>2</sup> StatsSA. Statistical Release P0310.1: National Poverty Lines 2021. Available online: <u>https://www.statssa.gov.za/publications/P03101/P031012021.pdf</u>
	Upper-bound pove	erty line: Population
Area	Poverty headcount under UBPL (Number of persons) 2021	UBPL Poverty headcount index (Percentage of population) 2021
Mopani District	636,719	53.0%
Ba-Phalaborwa	76,169	46.4%
Greater Giyani	165,191	62.8%
Greater Letaba	120,698	50.6%
Greater Tzaneen	211,783	49.1%
Maruleng	62,878	60.1%
Sekhukhune District	658,926	54.6%
Elias Motsoaledi	150,918	54.1%
Ephraim Mogale	81,592	58.3%
Fetakgomo Tubatse	240,591	50.2%
Makhuduthamaga	185,825	60.2%
Vhembe District	730,210	51.0%
Collins Chabane	190,392	51.1%
Makhado	219,430	49.9%
Musina	55,064	49.2%
Thulamela	265,324	52.2%
Waterberg District	370,269	49.2%
Bela-Bela	32,384	45.5%
Lephalale	65,120	55.0%
Modimolle- Mookgopong	56,060	48.2%
Mogalakwena	185,451	54.1%
Thabazimbi	31,254	30.0%

Own calculations based on StatsSA MYPE 2022, Quantec Standardised Regional Data, Easy Data 2022 and on IHS Global Insight Regional Explorer, 2022. Zutari-CSIR collaboration for analysis

The table indicates that in 2021 a total of 30.7 million people, or 51.2% of the South African population, fell in the UBPL. The portion of Limpopo's population that fell in the UBPL (UBPL Poverty headcount index) in 2021 were

slightly higher than on national level, at 51.6%, which translates to over 3 million vulnerable people due to their poverty line.

On a district level, the Waterberg and Capricorn Districts had the lowest UBPL Poverty headcount index in 2021, at 49.2% and 49.7% respectively, with both below the Provincial index of 51.6%. On municipal level, Bela-Bela and Thabazimbi had the lowest UBPL Poverty headcount index in 2021, at 45.5% and 30.0% respectively, as can be seen in Figure 9.

With reference to Table 7, the highest concentration of vulnerable people staying in poverty in terms of numbers, are found in the following municipalities (more than 200,000 people in UPBL in 2021):

- Polokwane (361,638)
- Fetakgomo Tubatse (240,591)
- Thulamela (265,324)
- Makhado (219,430)
- Greater Tzaneen (211,413)

Figure 9 includes the distribution of economic activities to assist to make correlations between the poverty trends and access to economic opportunities. However, there seems not to be a definite trend. The trend that does emerge is the contribution of the dispersed settlement patterns and consequent varying levels of access to services, to the concentration of poverty in the areas highlighted.



Figure 9: Percentage of population in upper-bound poverty line, 2021

## 3.2.2 Grant dependency

Limpopo residents' dependency on the five social grant funding mechanisms is illustrated in Figure 10. The graph illustrates the total number of social grants paid out end of October 2022 in Limpopo.

According to SASSA Seventh Statistical Report: Social Assistance, October 2022, a total of 2,722,899 grants were paid out to Limpopo residents. It translates to approximately 45.9% of the provincial population that is dependent on social grants (applying the population of MYPE, 2022, as per the Sassa source).

The child support grant is the grant on which the majority (75%) of vulnerable people in Limpopo depend on. For the month of October 2022, more than 2 million child support grants alone, were paid out in the province.

The grant payments also provide indications of people living with disabilities. In the said month, 101,373 people received the disability grant due to permanent disability.



#### Figure 10: Number of social grant per grant type, end October 2022

Source: Stats SA https://www.sassa.gov.za/statisticalreports/Documents/October%202022%20%20social%20assistance%20%20submitted.pdf

# 3.2.3 Child-headed households residing in inadequate dwellings

According to the StatsSA Community Survey 2016, 25,867 households in the province were headed by children under the age of 18 in 2016. The majority of these households were staying in adequate dwelling types (88.1%).

Of the child-headed households in the province, 10.8%, or 2,804 households, resided in inadequate dwellings, most of which were in the Collins Chabane (732 households) and Greater Giyani (264 households) municipalities. Through the spatial representation of the distribution of the child-headed households in Figure 11, it is indicated that most of these vulnerable households were situated in the eastern parts of the province.



Figure 11: Child-headed households residing in inadequate dwellings, 2016

## 3.2.4 Level of education

Education and training satisfy the basic human need for knowledge and skills. It provides a means of meeting basic needs if there are adequate employment opportunities and helps sustain and accelerate overall development. Through education, people are afforded more opportunities for a fulfilling life.

The level of education of the population in a region influences the population's welfare through its indirect effect on health, fertility and life expectancy. One of the prominent metrics to gauge the level of education and skills provision in a community is the literacy rate, which include the functional illiteracy rate and the functional literacy rate:

- The functional illiteracy rate of the population is the percentage of persons aged 20 years and above with the highest level of education less than Grade 7.
- The functional literacy rate of the population is the percentage of persons aged 20 years and above with the highest level of education Grade 7 and higher.

Table 8 depicts the total functional illiteracy and literacy rates for 2016 and 2021. It further depicts the change in the total functional illiteracy rate for the period 2016 to 2021 as well as the functional illiteracy rates per gender (male and female) for 2016 and 2021. Figure 13 summarises the functional illiteracy rates for 2016 and 2021.

The 2021 functional illiteracy rate for Limpopo is estimated at 31.9% of which 62.8% comprise of females. In 2016 and 2021, Limpopo had a higher functional illiteracy rate than South Africa as a whole (8.3% and 8.9% for the respective years).

The spatial distribution of the functional illiteracy rate is showed in Figure 12. Eleven local municipalities are flagged as areas where the functional illiteracy rate is higher than the rest of Limpopo in 2021 (31.9%). These local

municipalities are illustrated in Figure 14 in order of areas with highest functional illiteracy.

There are clear correlations between these vulnerable communities and access to overall services, in particular the access to education facilities are lower in these areas (refer to the analysis of community infrastructure). These communities are also residing in areas furthest from development corridors and areas of highest economic activity in the province.



Figure 12: Adult education: percentage functionally illiterate adults, 2021

	201	16	202	21	2016 to 2021	20	16	202	:1
Area	Functional	Functional	Functional	Functional	Functional	Functional illi	teracy rate (%)	Functional illite	eracy rate (%)
	illiteracy rate	literacy rate	illiteracy rate	literacy rate	illiteracy rate change	Male	Female	Male	Female
South Africa	21.5%	77.3%	22.9%	76.7%	1.4%	44.2%	55.8%	44.5%	55.5%
Limpopo Province	29.8%	69.3%	31.9%	68.0%	2.0%	37.2%	62.8%	37.9%	62.1%
Capricorn District	26.4%	72.9%	28.4%	71.4%	2.0%	36.9%	63.1%	37.3%	62.7%
Blouberg	44.1%	55.7%	47.7%	52.2%	3.6%	36.4%	63.6%	36.6%	63.4%
Lepelle-Nkumpi	32.4%	67.0%	34.8%	65.1%	2.4%	34.2%	65.8%	34.8%	65.2%
Molemole	34.0%	65.6%	36.8%	63.1%	2.8%	35.9%	64.1%	36.0%	64.0%
Polokwane	19.7%	79.4%	21.2%	78.7%	1.6%	38.7%	61.3%	39.2%	60.8%
Mopani District	34.5%	64.9%	37.4%	62.5%	2.8%	37.8%	62.2%	38.3%	61.7%
Ba-Phalaborwa	26.4%	72.0%	28.9%	70.8%	2.6%	44.6%	55.4%	45.4%	54.6%
Greater Giyani	38.8%	60.9%	41.8%	58.1%	3.0%	34.2%	65.8%	34.7%	65.3%
Greater Letaba	39.9%	59.9%	43.1%	56.8%	3.2%	34.7%	65.3%	34.9%	65.1%
Greater Tzaneen	32.3%	67.3%	34.8%	65.1%	2.5%	39.1%	60.9%	39.6%	60.4%
Maruleng	36.2%	62.7%	39.3%	60.5%	3.2%	41.0%	59.0%	41.4%	58.6%
Sekhukhune District	30.6%	69.0%	31.3%	68.6%	0.8%	35.5%	64.5%	36.1%	63.9%
Elias Motsoaledi	34.0%	65.6%	35.6%	64.4%	1.6%	37.7%	62.3%	38.4%	61.6%
Ephraim Mogale	34.8%	64.9%	36.2%	63.7%	1.5%	40.6%	59.4%	41.3%	58.7%
Fetakgomo Tubatse	25.9%	73.6%	26.3%	73.7%	0.4%	34.6%	65.4%	35.4%	64.6%
Makhuduthamaga	33.0%	66.7%	33.5%	66.4%	0.5%	31.8%	68.2%	32.0%	68.0%
Vhembe District	28.8%	70.4%	30.9%	68.9%	2.2%	33.1%	66.9%	33.9%	66.1%
Collins Chabane	28.9%	70.3%	31.1%	68.8%	2.1%	32.5%	67.5%	33.2%	66.8%
Makhado	29.2%	69.9%	31.5%	68.3%	2.3%	34.1%	65.9%	35.0%	65.0%
Musina	24.8%	73.7%	26.9%	72.8%	2.1%	38.9%	61.1%	40.1%	59.9%
Thulamela	29.3%	70.0%	31.3%	68.6%	2.0%	31.5%	68.5%	32.3%	67.7%
Waterberg District	29.3%	68.7%	31.7%	67.9%	2.5%	46.2%	53.8%	47.3%	52.7%

## Table 8: Adult education level trends – Functional illiteracy and literacy rates, 2016 to 2021

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

	20	16	2021		2016 to 2021	2016		2021		
Area	Functional	Functional	Functional	Functional	Functional	Functional illi	Functional illiteracy rate (%)		Functional illiteracy rate (%)	
Rola Rola	illiteracy rate	literacy rate	illiteracy rate	literacy rate	change	Male	Female	Male	Female	
Bela-Bela	26.0%	72.8%	28.0%	71.8%	2.0%	49.7%	50.3%	50.2%	49.8%	
Lephalale	25.3%	70.3%	27.9%	71.3%	2.6%	47.7%	52.3%	49.9%	50.1%	
Modimolle-Mookgopong	29.2%	69.7%	31.5%	68.2%	2.3%	50.8%	49.2%	50.9%	49.1%	
Mogalakwena	33.5%	66.0%	35.8%	64.1%	2.3%	37.3%	62.7%	37.2%	62.8%	
Thabazimbi	24.6%	70.1%	27.9%	71.1%	3.2%	66.9%	33.1%	70.0%	30.0%	

Source: Own calculations based on StatsSA MYPE 2021 and 2022, Quantec Standardised Regional Data, Easy Data 2022



Figure 13: National, provincial and district functional illiteracy rates, 2016 and 2021

Source: Own calculations based Standardised Regional Data, Easy Data 2022



Figure 14: Local municipal functional illiteracy rates, 2021

Source: Own calculations based Standardised Regional Data, Easy Data 2022

The highest level of education attainment (HLEA) for adults (aged 20 years or older) is classified as follows<sup>3</sup>:

- No schooling: No schooling and Grade R/0.
- Less than primary: Grade 1/Sub A, Grade 2/Sub B, Grade 3/Standard 1/AET 1 (KHARI RI GUDE, SANLI), Grade 4/Standard 2, Grade 5/Standard 3/AET 2, Grade 6/Standard 4.
- Complete primary: Grade 7/Standard 5/AET 3.
- Some secondary: Grade 8/Standard 6/Form 1, Grade 9/Standard 7/Form 2/AET 4, Grade 10/Standard 8/Form 3, Grade 11/Standard 9/Form 4, NTC I/N1/NIC/(v) Level 2, NTC II/N2/NIC/(v) Level 3, Certificate with less than Grade 12/Std 10 and Diploma with less than Grade 12/Std 10.
- Complete secondary (Grade 12 or equivalent): Grade 12/Standard 10/Form 5/ Matric (No Exemption), Grade 12/Standard 10/Form 5/Matric (Exemption/Bachelor's pass) and NTC III/N3/NC(V) Level 4.
- Higher:
  - Certificate: N4/NTC 4, N5/NTC 5, N6/NTC 6, and Certificate with Grade 12/Std 10.
  - Diploma: Diploma with Grade 12/Std 10 and Higher Diploma.

#### Table 9: Adult education levels - highest level of education attainment, 2021

 Degree: Post Higher Diploma (Masters; Doctoral Diploma), Bachelors Degree, Post Graduate Diploma, Honours Degree and Higher Degree (Masters/PhD).

Other: Other and do not know.

The highest level of education attainment (HLEA) for adults for 2021 is depicted in Table 9. The combined percentage of adults in Limpopo which have a secondary (Grade 12 or equivalent) or higher education is 33%. The adult education level is significantly lower in Limpopo compared to South Africa's attainment of 42.5% of adults. This trend highlights a serious gap in education in the province, that need to be researched and adequately responded to in the context of the economic development path the province is envisioning.

In Limpopo, the Capricorn and Vhembe districts have the highest number of adults with a secondary (Grade 12 or equivalent) or higher education (38.5% and 33.8%). In both districts, the number is above the provincial total of 33%. These are also the two districts where the provincial universities are located, and can potentially be attributed to the higher levels.

Area	No schooling	Less than primary	Complete primary	Some secondary	Complete secondary (Grade 12 or equivalent)	Higher education	Other
South Africa	12.6%	10.4%	3.9%	30.3%	30.0%	12.6%	0.3%
Limpopo Province	21.4%	10.4%	4.0%	31.0%	22.0%	11.0%	0.1%
Capricorn District	18.2%	10.2%	3.8%	29.2%	23.6%	14.9%	0.1%
Blouberg	35.5%	12.2%	4.7%	26.6%	14.7%	6.3%	0.1%
Lepelle-Nkumpi	24.6%	10.1%	3.4%	27.9%	21.0%	12.8%	0.1%
Molemole	26.1%	10.6%	4.2%	30.9%	18.1%	9.9%	0.1%
Polokwane	11.4%	9.8%	3.6%	29.8%	27.1%	18.1%	0.1%
Mopani District	27.0%	10.3%	3.7%	29.4%	19.8%	9.6%	0.1%

<sup>3</sup> Khuluvhe, M. and Ganyaupfu, E.M. (2022). Highest Level of Educational Attainment in South Africa. Department of Higher Education and Training, Pretoria. Available online: https://www.dhet.gov.za/Planning%20Monitoring%20and%20Evaluation%20Coordination /Fact%20Sheet\_Highest%20Level%20of%20Educational%20Attainment%20in%20South% 20Africa%20-%20June%202022.pdf

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

Area	No schooling	Less than primary	Complete primary	Some secondary	Complete secondary (Grade 12 or equivalent)	Higher education	Other
Ba-Phalaborwa	19.4%	9.5%	3.4%	31.0%	22.7%	13.7%	0.3%
Greater Giyani	31.6%	10.2%	3.7%	26.3%	19.4%	8.8%	0.1%
Greater Letaba	33.5%	9.7%	3.5%	29.4%	16.6%	7.3%	0.1%
Greater Tzaneen	24.3%	10.6%	4.0%	30.1%	20.9%	10.1%	0.1%
Maruleng	27.1%	12.2%	3.8%	31.4%	17.6%	7.7%	0.2%
Sekhukhune District	22.1%	9.3%	3.5%	34.6%	22.9%	7.6%	0.1%
Elias Motsoaledi	25.8%	9.8%	3.8%	31.5%	21.3%	7.7%	0.1%
Ephraim Mogale	24.6%	11.6%	4.8%	32.3%	20.5%	6.1%	0.1%
Fetakgomo Tubatse	18.0%	8.2%	3.1%	37.8%	24.5%	8.3%	0.1%
Makhuduthamaga	24.2%	9.4%	3.2%	33.1%	22.8%	7.3%	0.1%
Vhembe District	21.0%	9.9%	4.2%	30.9%	21.7%	12.2%	0.1%
Collins Chabane	21.2%	9.9%	3.9%	30.3%	21.8%	12.8%	0.1%
Makhado	22.0%	9.5%	4.1%	31.0%	22.0%	11.2%	0.1%
Musina	17.2%	9.7%	6.5%	36.5%	21.1%	8.6%	0.3%
Thulamela	20.9%	10.4%	3.8%	30.0%	21.4%	13.4%	0.1%
Waterberg District	18.2%	13.6%	4.8%	31.6%	21.7%	9.8%	0.4%
Bela-Bela	14.7%	13.3%	4.5%	32.2%	25.1%	10.0%	0.2%
Lephalale	14.9%	13.0%	4.7%	32.7%	22.0%	11.9%	0.7%
Modimolle-Mookgopong	16.7%	14.8%	5.7%	31.7%	21.7%	9.1%	0.3%
Mogalakwena	22.8%	13.1%	4.2%	30.2%	19.9%	9.9%	0.1%
Thabazimbi	13.6%	14.3%	6.0%	33.5%	23.7%	8.0%	1.0%

Source: Quantec Standardised Regional Data, Easy Data 2022

Apart from the level of attainment of secondary and higher education, the concerning percentage of adults attaining lower qualifications need to be assessed. A series of maps have been prepared that show the percentage of adults in a respective municipality with no schooling, only primary school, secondary and higher education attainment. These maps also include layers that show the settlements that were identified to have no access according to the CSIR published *Guidelines for the provision of social facilities in South Africa* in 2012 and reprinted them in 2015.. The purpose is to spatially assess

if there is a correlation between education attainment and spatial access to education facilities, noting that the quality and other factors also contribute to the level of education.

The maps clearly illustrate the correlation that do exist between areas with highest level of no schooling, such as Blouberg, and the settlements identified to have no proper travel access to existing facilities. The attainment of primary education only, relate to the most sparsely populated regions of the province where pupils have to travel long distances to access secondary education.





Figure 15: Highest education level achieved

## 3.2.5 Access to basic services

Access to basic services (StatsSA Community Survey 2016) is summarised below. This information will be updated when Census 2022 data becomes available.



#### OVERLAP OF LOW SERVICE LEVELS

Figure 16: Access to basic services summary

## 3.3 Economic trends

*Economic trends* over the five-year period 2016 to 2021 are presented in this section for several economic indicators to gain insight into economic growth or decline over recent years. The economic trends are derived from IHS Global Insight Regional Explorer, 2022 and Quantec Research, Standardised Regional Data, Easy Data 2022.

Although the economic trend analysis shows both positive and negative growth at a district and a local municipal level, in general, over the five-year period 2016 to 2021, Limpopo experienced a positive average annual Gross Value Added (GVA) growth rate of 0.5%, which is higher than the national growth rate of 0.3%. In terms of industry contribution to total GVA, the mining and quarrying and government and community services show the highest contributions at a provincial level, with mining and quarrying being the dominant industry. At a provincial level, only four economic industries showed positive average annual growth rates (AAGRs):

- Agriculture
- Mining and quarrying
- Finance, insurance, real estate and business services
- Government and community services

*Employment* showed a declining trend in all districts from 2016 to 2021. The provincial employment rate in 2021 was 58.3%, compared to 66.3% in 2016, which reflects a negative average annual growth rate (AAGR) of -2.54% from 2016 to 2021. In this regard, the unforeseen outbreak of the COVID-19 pandemic had a significant impact on the decline in employment trends towards the end of the five-year period measured from 2020 to 2021. This two-year period was characterised by significant job losses and salary cuts due to the country's complete lockdown, which impacted negatively on normal business operations. The provincial unemployment rate increased significantly from 33.7% in 2016 to 41.7% in 2021 at an average annual growth rate of 4.7%. In both 2016 and 2021, the provincial unemployment rate was higher than the national unemployment rate.

At a provincial level, the largest industry contributors to employment over the five-year period were government and community services, wholesale and retail trade, catering and accommodation, and agriculture. The province has a competitive advantage in several industries, most notably the mining and quarrying and agricultural industries.

In terms of *economic concentration and diversification*, some industries either do not meet or mostly meet local demands. The only industry that meets local needs at a provincial level is the mining and quarrying industry, to the extent that it exports goods and services to other areas.

The primary **economic activities** in the province are agriculture, and mining and quarrying. At a provincial level, the agriculture industry is currently the strongest industry in Limpopo. At a district level, the Mopani and Vhembe districts take the lead in the agriculture industry. At a district level, the overall agriculture industry had the highest contribution to the total GVA in the Capricorn and Waterberg districts. At a district level, the agriculture industry shows the highest contribution to total employment in the Sekhukhune district. At a provincial level, the manufacturing industry and its sub-industries showed limited development prospects and contributed only 2.5% to the total GVA and 5.6% to total employment over the period 2016 to 2021.

## **3.3.1 Economic context and performance**

Gross domestic product (GDP) is the total monetary or market value of all the finished goods and services produced within a specific region's borders within a specific period. As a broad measure of overall domestic production, it is a comprehensive scorecard of a given region's economic health. Gross value added (GVA) is the measure of the total value of goods and services produced in an economy (area, region or country). The amount of value added to a product is considered. GVA provides a monetary value for the amount of goods and services that are produced in an economy, minus the cost of all inputs and raw materials that are directly associated with that production. GVA thus adjusts the gross domestic product (GDP) by the impact of subsidies and taxes (tariffs) on products. The relationship between GVA and GDP is defined as follows:

#### GVA = GDP + subsidies on products – taxes on products

The GVA can be used to measure the size of economic production in a region, the sectoral or structural composition of the local economy or the growth rate of production. It also reflects the comparative advantages of the production structure, the vulnerability or diversification of the economy, the productivity of the labour force, the welfare of the local inhabitants, etc. However, the GVA reflects historical data but not future production potential.

The following data sources were consulted to develop an analysis of economic and employment trends:

- IHS Global Insight Regional Explorer, 2022. Zutari-CSIR collaboration for analysis
- Quantec Research, Standardised Regional Data, Easy Data 2022

Figure 17 depicts the contribution of each of the five districts to the province's total economy in 2021. The Capricorn and Mopani districts are the main contributors, contributing 31.5% and 22.8% respectively.



## Figure 17: District contribution to Limpopo's total economy (GVA current prices 2021)

Source: Own calculations based on IHS Global Insight Regional Explorer, 2022. Zutari-CSIR collaboration for analysis

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

Table 10 illustrates the following economic indicators of Limpopo's overall economic context and performance:

- Total GVA (rand millions, current prices 2021)
- Total GVA ranking of each municipality (GVA current prices 2021)
- Contribution of local municipalities to their respective districts' economy (GVA current prices 2021)
- Total GVA growth over a five-year period from 2016 to 2021 (constant 2015 prices)
- Total GVA average annual growth rate (AAGR) over a five-year period from 2016 to 2021 (constant 2015 prices)
- GVA per capita 2021
- GVA per capita ranking of each municipality

In 2021, South Africa's GVA was R6,6 trillion, of which Limpopo contributed 7.6%, or R422 billion.

A comparison of the total GVA for 2016 and 2021 (2015 constant prices) per local municipality is included in Appendix A as a further means to show economic trends.

Table 10:	Economic context and performance,	2016 to 20	21
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Area	Total GVA (R'millions, current prices 2021)	Total GVA Ranking (1 = best, 22 = worst)	Contribution to Provincial GVA (current prices 2021)	Contribution to District GVA (current prices 2021)	Total GVA growth 2016 to 2021 (5-year period, constant 2015 prices)	Total GVA AAGR 2016 to 2021 (5- year period, constant 2015 prices)	GVA per Capita (Current prices 2021)	GVA per Capita Ranking (1 = best, 22 = worst)
South Africa	5,572,608				1.5%	0.3%	92,931	
Limpopo Province	421,780				2.7%	0.5%	71,402	
Capricorn District	132,942		31.5%	100%	3.9%	0.8%	101,285	
Blouberg	8,103	18	1.9%	6.1%	4.8%	0.9%	43,680	19
Lepelle-Nkumpi	11,681	13	2.8%	8.8%	3.1%	0.6%	47,693	15
Molemole	10,455	15	2.5%	7.9%	2.3%	0.5%	79,385	7
Polokwane	102,703	1	24.3%	77.3%	4.1%	0.8%	136,861	4
Mopani District	95,967		22.8%	100%	5.1%	1.0%	79,865	
Ba-Phalaborwa	23,355	5	5.5%	24.3%	-7.6%	-1.6%	142,198	2
Greater Giyani	21,232	7	5.0%	22.1%	36.8%	6.5%	80,721	5
Greater Letaba	11,095	14	2.6%	11.6%	4.4%	0.9%	46,483	16
Greater Tzaneen	31,864	2	7.6%	33.2%	0.1%	0.0%	73,928	10
Maruleng	8,420	17	2.0%	8.8%	-11.2%	-2.3%	80,471	6
Sekhukhune District	46,684		11.1%	100%	-3.5%	-0.7%	38,673	
Elias Motsoaledi	13,407	12	3.2%	28.7%	8.8%	1.7%	48,095	14
Ephraim Mogale	4,900	22	1.2%	10.5%	6.2%	1.2%	35,013	21
Fetakgomo Tubatse	21,099	8	5.0%	45.2%	-14.0%	-3.0%	44,002	18
Makhuduthamaga	7,277	20	1.7%	15.6%	-6.0%	-1.2%	23,556	22
Vhembe District	70,461		16.7%	100%	9.2%	1.8%	49,183	
Collins Chabane	17,260	10	4.1%	24.5%	10.2%	2.0%	46,308	17
Makhado	24,151	4	5.7%	34.3%	6.2%	1.2%	54,870	12
Musina	7,680	19	1.8%	10.9%	7.3%	1.4%	68,665	11
Thulamela	21,370	6	5.1%	30.3%	12.5%	2.4%	42,075	20

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

Area	Total GVA (R'millions, current prices 2021)	Total GVA Ranking (1 = best, 22 = worst)	Contribution to Provincial GVA (current prices 2021)	Contribution to District GVA (current prices 2021)	Total GVA growth 2016 to 2021 (5-year period, constant 2015 prices)	Total GVA AAGR 2016 to 2021 (5- year period, constant 2015 prices)	GVA per Capita (Current prices 2021)	GVA per Capita Ranking (1 = best, 22 = worst)
Waterberg District	75,727		18.0%	100%	-5.4%	-1.1%	100,540	
Bela-Bela	5,394	21	1.3%	7.1%	-4.7%	-1.0%	75,769	8
Lephalale	16,581	11	3.9%	21.9%	1.0%	0.2%	140,015	3
Modimolle-Mookgopong	8,703	16	2.1%	11.5%	0.4%	0.1%	74,839	9
Mogalakwena	18,167	9	4.3%	24.0%	1.3%	0.3%	52,957	13
Thabazimbi	26,882	3	6.4%	35.5%	-18.2%	-3.9%	257,864	1

Source: Own calculations based on IHS Global Insight Regional Explorer, 2022. Zutari-CSIR collaboration for analysis



Figure 18: Five-year period industry AAGR 2016 - 2021

It can be deduced from Table 10 that the following seven municipalities contribute 5% or more towards Limpopo's economy:

- Polokwane (24.3%)
- Greater Tzaneen (7.6%)
- Thabazimbi (6.4%)
- Makhado (5.7%)
- Ba-Phalaborwa (5.5%)
- Thulamela (5.1%)
- Greater Giyani (5%)
- Fetakgomo Tubatse (5%)

Over the five-year period 2016 to 2021, Limpopo experienced a positive average annual GVA growth rate of 0.5%, which is higher than the national growth rate of 0.3%. Over the same period, the Capricorn, Mopani and Vhembe districts experienced positive average annual GVA growth rates of 0.8%, 1% and 1.8% respectively, while the Sekhukhune and Waterberg districts experienced negative average annual GVA growth rates of -0.7% and -1.1% respectively.

The following local municipalities also experienced a negative average annual GVA growth rate:

- Bela-Bela (-1.0%)
- Makhuduthamaga (-1.2%)
- Maruleng (-2.3%)

- Fetakgomo Tubatse (-3.0%)
- Thabazimbi (-3.9%)
- Ba-Phalaborwa (-1.6%)

Over the same period (2016 to 2021), the following municipalities experienced the positive average annual GVA growth rate (1% or higher):

- Greater Giyani (6.5%)
- Thulamela (2.4%)
- Collins Chabane (2.0%)
- Elias Motsoaledi (1.7%)
- Musina (1.4%)
- Makhado (1.2%)
- Ephraim Mogale (1.2%)

The contribution of the various economic industries to their respective economy in 2021 (current prices) is represented in Table 11.

Area	Total GVA (R'millions, current prices 2021)	Agriculture	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction	Wholesale and retail trade, catering & accommodation	Transport, storage and communication	Finance, insurance, real estate and business services	Government and community services
South Africa	5,572,608	2.7%	8.5%	13.1%	3.1%	2.5%	13.5%	7.1%	23.7%	25.7%
Limpopo Province	421,780	3.0%	31.0%	2.5%	3.5%	1.8%	13.3%	3.6%	16.8%	24.5%
Capricorn District	132,942	2.2%	12.6%	3.4%	1.4%	2.3%	18.8%	5.0%	20.6%	33.6%
Blouberg	8,103	2.9%	12.9%	2.3%	1.5%	1.9%	13.3%	2.9%	30.3%	32.0%
Lepelle-Nkumpi	10,455	2.1%	23.3%	2.4%	2.0%	2.1%	13.3%	3.0%	14.0%	37.9%
Molemole	11,681	4.4%	17.0%	3.4%	1.9%	2.4%	20.8%	5.7%	13.5%	30.9%

### Table 11: Industry contribution to total GVA (current prices), 2021

Area	Total GVA (R'millions, current prices 2021)	Agriculture	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction	Wholesale and retail trade, catering & accommodation	Transport, storage and communication	Finance, insurance, real estate and business services	Government and community services
Polokwane	102,703	1.9%	11.0%	3.6%	1.3%	2.3%	19.6%	5.3%	21.3%	33.6%
Mopani District	95,967	4.5%	36.8%	1.8%	8.1%	1.6%	10.4%	2.7%	14.2%	19.9%
Ba-Phalaborwa	23,355	0.6%	81.3%	0.4%	1.3%	0.5%	2.3%	1.1%	8.1%	4.5%
Greater Giyani	21,232	8.0%	3.9%	1.1%	31.3%	1.8%	10.1%	1.9%	11.9%	30.0%
Greater Letaba	11,095	6.1%	15.5%	2.7%	2.2%	2.5%	18.8%	4.1%	19.1%	29.0%
Greater Tzaneen	31,864	5.4%	20.9%	3.3%	1.7%	2.2%	15.8%	3.9%	21.3%	25.6%
Maruleng	8,420	0.9%	84.5%	0.3%	0.9%	0.4%	2.4%	2.3%	4.0%	4.1%
Sekhukhune District	46,684	2.2%	48.8%	2.2%	1.9%	1.0%	9.7%	2.1%	16.4%	15.8%
Elias Motsoaledi	13,407	4.3%	15.8%	4.6%	2.6%	1.6%	17.6%	3.9%	23.4%	26.1%
Ephraim Mogale	4,900	6.9%	15.9%	3.2%	2.3%	2.4%	19.6%	4.8%	14.8%	30.2%
Fetakgomo Tubatse	21,099	0.3%	77.5%	0.8%	1.5%	0.3%	3.3%	0.6%	10.4%	5.4%
Makhuduthamaga	7,277	0.5%	48.4%	1.0%	1.3%	0.8%	7.2%	1.2%	22.2%	17.4%
Vhembe District	70,461	3.5%	10.9%	2.6%	4.5%	2.6%	16.1%	4.5%	21.9%	33.3%
Collins Chabane	17,260	3.0%	8.5%	2.7%	5.0%	2.7%	16.3%	4.2%	22.6%	35.0%
Makhado	24,151	3.4%	8.9%	3.1%	3.6%	2.6%	18.5%	5.1%	22.5%	32.4%
Musina	7,680	7.2%	28.3%	1.6%	1.7%	2.1%	13.9%	6.4%	15.3%	23.5%
Thulamela	21,370	2.9%	8.8%	2.4%	6.2%	2.7%	14.2%	3.5%	23.0%	36.4%
Waterberg District	75,727	2.6%	63.5%	1.7%	1.6%	1.2%	7.0%	2.2%	8.8%	11.4%
Bela-Bela	5,394	3.7%	43.6%	2.4%	2.0%	2.2%	12.3%	5.1%	14.4%	14.3%
Lephalale	16,581	1.7%	77.5%	0.9%	2.5%	0.7%	3.4%	1.1%	6.7%	5.6%
Modimolle-Mookgopong	8,703	10.4%	23.7%	3.4%	1.6%	2.6%	17.3%	5.7%	11.7%	23.4%
Mogalakwena	18,167	2.8%	28.6%	3.3%	2.1%	2.4%	12.9%	3.4%	18.6%	25.9%
Thabazimbi	26,882	0.3%	95.3%	0.4%	0.6%	0.2%	0.8%	0.4%	1.3%	0.8%

Source: Own calculations based on IHS Global Insight Regional Explorer, 2022. Zutari-CSIR collaboration for analysis

In Limpopo, the following industries showed the highest contribution to the total GVA (current prices) for 2021:

- Mining and quarrying (31.0%)
- Government and community services (24.5%)
- Finance, insurance, real estate and business services (16.8%)
- Wholesale and retail trade, catering and accommodation (13.3%)

Mining and quarrying is the dominant industry in the province. Of the above industries, the contribution of the mining and quarrying industry at a provincial level to the total GVA at 31.0% is significantly higher than the mining and quarrying industry contribution at a national level (8.5%).

At a district level, the following industries showed the highest contributions (15%+) per respective district, also illustrated in Figure 19

- Capricorn:
  - Government and community services (33.6%)
  - Finance, insurance, real estate and business services (20.6%)
  - Wholesale and retail trade, catering and accommodation (18.8%)
- Mopani:
  - Mining and quarrying (36.8%)
  - Government and community services (19.9%)
- Sekhukhune:
  - Mining and quarrying (48.8%)
  - Finance, insurance, real estate and business services (16.4%)
  - Government and community services (15.8%)
- Vhembe:
  - Government and community services (33.3%)
  - Finance, insurance, real estate and business services (21.9%)

- Wholesale and retail trade, catering and accommodation (16.1%)
- Waterberg:
  - Mining and quarrying (63.5%)

The mining and quarrying industry contribute more than 50% to the GVA of the following local municipalities at a local level:

- Thabazimbi (95.3%)
- Maruleng (84.5%)
- Ba-Phalaborwa (81.3%)
- Fetakgomo Tubatse (77.5%)
- Lephalale (77.5%)

It is noted that Mogalakwena and Elias Motsoaledi are prioritised under the Revitalisation of Distressed Mining Communities intervention. The contribution of the mining and quarrying industry to the municipal level GVA was 28.6% and 15,8% respectively. These two municipalities seem to be less dependent on the mining and quarrying industry as they have also larger contributions to GVA in respect of other industries.

On the other hand, the mining and quarrying industry contribute almost half (48.4%) to the GVA of Makhuduthamaga municipality. This municipality, and the five municipalities listed above, can be regarded as mining dependent municipalities.

The average annual growth rates of the economic industries for the five-year period 2016 to 2021 are represented in Table 12 (GVA at constant 2015 prices).



Figure 19: Industry contribution to total GVA per district (current prices) in 2021

Area	Total average annual growth rate	Agriculture	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction	Wholesale and retail trade, catering and accommodation	Transport, storage and communication	Finance, insurance, real estate and business services	Government and community services
South Africa	0.3%	7.0%	-0.1%	-1.3%	-1.2%	-6.5%	-1.6%	-1.8%	2.5%	1.2%
Limpopo Province	0.5%	7.7%	2.0%	-1.6%	-1.4%	-6.5%	-1.7%	-2.3%	1.9%	0.7%
Capricorn District	0.8%	7.8%	6.6%	-0.8%	-3.2%	-6.1%	-1.4%	-1.5%	2.2%	0.9%
Blouberg	0.9%	9.1%	2.0%	0.5%	-2.2%	-4.8%	0.5%	-0.4%	-0.6%	2.6%
Lepelle-Nkumpi	0.5%	6.7%	6.9%	-1.8%	-3.3%	-7.0%	-2.2%	-2.5%	1.6%	-0.1%
Molemole	0.6%	7.1%	6.6%	-1.3%	-3.2%	-6.5%	-1.8%	-2.1%	3.5%	0.3%
Polokwane	0.8%	8.0%	7.0%	-0.8%	-3.3%	-6.0%	-1.3%	-1.4%	2.5%	1.0%
Mopani District	1.0%	9.1%	2.2%	-1.7%	0.4%	-6.4%	-1.4%	-3.6%	0.9%	1.4%
Ba-Phalaborwa	-1.6%	-1.7%	0.8%	-9.9%	-4.0%	-14.6%	-10.3%	-10.9%	-2.9%	-8.1%
Greater Giyani	6.5%	15.9%	14.2%	7.2%	1.4%	1.2%	6.7%	6.1%	6.7%	8.6%
Greater Letaba	0.9%	7.7%	6.8%	-0.9%	-2.9%	-6.1%	-1.1%	-1.7%	0.8%	0.9%
Greater Tzaneen	0.0%	6.1%	6.2%	-2.1%	-4.4%	-7.5%	-2.5%	-3.0%	0.5%	-0.6%
Maruleng	-2.3%	-2.8%	0.2%	-10.8%	-4.1%	-15.5%	-11.2%	-12.9%	-3.9%	-9.1%
Sekhukhune District	-0.7%	7.0%	0.5%	-3.2%	-4.1%	-8.5%	-3.8%	-3.8%	1.3%	-1.9%
Elias Motsoaledi	1.7%	8.5%	5.4%	-0.3%	-2.3%	-5.7%	-0.9%	-1.3%	3.5%	1.3%
Ephraim Mogale	1.2%	7.8%	6.8%	-1.1%	-3.2%	-6.2%	-1.5%	-1.9%	3.8%	0.6%
Fetakgomo Tubatse	-3.0%	-3.1%	-1.1%	-11.6%	-6.1%	-15.8%	-11.6%	-11.9%	-0.9%	-9.2%
Makhuduthamaga	-1.2%	2.0%	3.3%	-6.3%	-4.6%	-11.3%	-6.5%	-7.0%	-0.2%	-4.7%
Vhembe District	1.8%	8.1%	7.3%	0.1%	-2.7%	-5.3%	-0.7%	-1.2%	4.1%	1.8%
Collins Chabane	2.0%	8.8%	8.6%	0.5%	-2.6%	-5.0%	-0.4%	-0.6%	4.1%	2.1%
Makhado	1.2%	8.1%	8.0%	-0.4%	-3.3%	-5.8%	-1.1%	-1.6%	3.5%	1.2%
Musina	1.4%	6.4%	6.0%	-2.4%	-2.9%	-7.2%	-2.4%	-2.9%	4.7%	-0.2%
Thulamela	2.4%	9.3%	7.2%	1.2%	-2.4%	-4.5%	0.3%	0.3%	4.4%	2.6%

 Table 12:
 Five-year period industry average annual growth (GVA constant 2015 prices), 2016 to 2021

Area	Total average annual growth rate	Agriculture	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction	Wholesale and retail trade, catering and accommodation	Transport, storage and communication	Finance, insurance, real estate and business services	Government and community services
Waterberg District	-1.1%	4.5%	0.2%	-4.7%	-3.8%	-9.2%	-4.3%	-4.8%	-0.5%	-1.8%
Bela-Bela	-1.0%	4.0%	4.6%	-4.5%	-3.7%	-9.6%	-5.1%	-5.7%	0.3%	-3.0%
Lephalale	0.2%	1.1%	3.0%	-7.4%	-4.3%	-12.1%	-7.5%	-7.4%	-1.9%	-5.5%
Modimolle-Mookgopong	0.1%	6.0%	6.4%	-3.1%	-4.3%	-7.9%	-3.5%	-3.1%	2.5%	-1.2%
Mogalakwena	0.3%	6.6%	7.1%	-2.5%	-2.9%	-7.3%	-2.5%	-2.7%	-0.4%	-0.4%
Thabazimbi	-3.9%	-6.1%	-3.2%	-14.4%	-4.2%	-18.5%	-14.7%	-14.6%	-5.8%	-12.3%

Source: Own calculations based on IHS Global Insight Regional Explorer, 2022. Zutari-CSIR collaboration for analysis

At a provincial level, only four economic industries showed positive average annual growth rates from 2016 to 2021:

- Agriculture (7.8%)
- Mining and quarrying (2.0%)
- Finance, insurance, real estate and business services (1.9%)
- Government and community services (0.7%)

At a district level, the same four industries showed positive growth rates in Capricorn and Mopani. In the Vhembe district, in addition to the four industries mentioned above, the manufacturing industry also showed a positive average annual growth rate from 2016 to 2021. In the Sekhukhune and Waterberg districts, only agriculture and mining and quarrying showed positive average annual growth rates.

Greater Giyani is the only local municipality that showed growth in all economic industries, with the following average annual growth rates per industry:

- Agriculture (15.9%)
- Mining and quarrying (14.2%)

### Finance, insurance, real estate and business services (6.7%)

- Manufacturing (7.2%)
- Wholesale and retail trade, catering and accommodation (6.7%)
- Government and community services (8.6%)
- Transport, storage and communication (6.1%)
- Electricity, gas and water (1.4%)
- Construction (1.2%)

The respective growth rates per industry represent the average annual growth (GVA constant 2015 prices), for the overall five-year period from 2016-2021, thereby reflecting on growth rates for both the pre-COVID period (2016-2019) as well as the COVID-period (2020-2021). Due to the COVID-period being included, the average annual growth for the overall five-year period from 2016-2021 might be slightly skewed. Although five of the nine industries show negative growth, the most notable negative average annual growth is evident in the construction industry that can potentially be attributed to the impact of the pandemic.

## 3.3.2 Labour and employment

When analysing the labour and employment conditions in any region, it is necessary to focus on the current size and spatial distribution of the labour force.

Secondly, the characteristics and predicted growth trends of the labour market should be analysed. To this end, it is necessary to examine the supply of labour, which is derived from figures on the economically active population in a region. The demand for labour, on the other hand, is an indication of employment opportunities, which are determined by the economic structure of an area along with level of growth in economic activity. Unemployment and migratory patterns indicated through interregional commuting provide an indication of the difference between supply and demand and imply that equilibrium in the labour market necessitates both the expansion of economic activity and the curtailment of population growth.

A third issue that should be addressed is involvement in sectors other than the formal labour market such as the informal and subsistence agricultural sector. The size of this sector is difficult to establish with a reasonable degree of accuracy and can easily be underestimated. One reason for this is that people involved in informal activity often classify themselves as unemployed. In addition, subsistence farmers can easily classify themselves as part of the agricultural sector or even as unemployed. Within the rural environment of Limpopo, this specific part of the labour force is important to be considered.

Finally, the quality of the labour force needs to be analysed as it provides information on the employability of workers. The quality of labour is reflected, amongst other things, by the educational profile of the economically active population as well as the availability of training facilities, and the health status of the region.

Relevant labour and employment definitions:<sup>4</sup>

- Working-age population: persons aged 15 to 65 years.
- Economically active person: a person of working age who is available for work, and is either employed, or is unemployed but has taken active steps to find work in the reference period (see labour force).
- Labour force: all employed and unemployed persons of working age.
- **Employed person:** a person who performs work for pay, profit or family gain in the reference point, or who was absent from work but had work to return to.
- Unemployed person (official and expanded definition of unemployment): those people within the economically active population who: (a) did not work during the seven days prior to the interview, (b) want to work and are available to start work within two weeks of the interview, and (c) have taken active steps to look for work or start some form of selfemployment in the four weeks prior to the interview. (The expanded definition of unemployment excludes criterion (c).)
- **Unemployment rate:** the percentage of the economically active population (labour force) that is unemployed.
- Not economically active population: people who are not available for work, such as full-time scholars and students, full-time homemakers, those who are retired and those who are unable or unwilling to work.

The employment trends for the five-year period 2016 to 2021 are depicted in Table 13.

<sup>&</sup>lt;sup>4</sup> StatsSA. 2010. Concepts and Definitions for Statistics South Africa\_V3. Online: <u>https://www.statssa.gov.za/standardisation/Concepts\_and\_Definitions\_%20StatsSAV3.p</u> df

Part C: Socio-Economic Analysis

## Table 13: Employment trends, 2016 to 2021

			2016			2021						2016 to 2021	
Area	Labour	Total employed (formal + informal sector)		Employed: formal sector	Employed informal sector	Labour	Total employed (formal + informal sector)		Employed: formal sector	Employed informal sector	Total employment	Total employment	
	10100	Number	% of total labour force	% of total employed	% of total employed	10100	Number	% of total labour force	% of total employed	% of total employed	numbers	AAGR (%)	
South Africa	21,546,001	15,793,377	73.3%	75.2%	24.8%	22,201,460	14,543,241	65.5%	82.3%	17.7%	-1,250,136	-1.6%	
Limpopo Province	1,633,438	1,082,972	66.3%	69.8%	30.2%	1,662,823	969,469	58.3%	78.4%	21.6%	-113,503	-2.2%	
Capricorn District	384,537	268,316	69.8%	71.5%	28.5%	390,089	246,136	63.1%	79.8%	20.2%	-22,180	-1.7%	
Blouberg	34,548	23,981	69.4%	65.4%	34.6%	32,510	20,033	61.6%	75.3%	24.7%	-3,948	-3.5%	
Lepelle-Nkumpi	57,065	33,141	58.1%	73.7%	26.3%	59,365	30,704	51.7%	81.9%	18.1%	-2,437	-1.5%	
Molemole	34,680	23,683	68.3%	69.2%	30.8%	34,001	20,481	60.2%	78.6%	21.4%	-3,202	-2.9%	
Polokwane	258,244	187,511	72.6%	72.2%	27.8%	264,214	174,918	66.2%	80.1%	19.9%	-12,593	-1.4%	
Mopani District	338,625	230,868	68.2%	68.4%	31.6%	333,347	197,325	59.2%	76.9%	23.1%	-33,543	-3.1%	
Ba-Phalaborwa	61,288	42,894	70.0%	78.3%	21.7%	63,176	38,688	61.2%	84.9%	15.1%	-4,206	-2.0%	
Greater Giyani	52,747	29,869	56.6%	70.7%	29.3%	53,097	25,805	48.6%	78.3%	21.7%	-4,064	-2.9%	
Greater Letaba	58,726	41,168	70.1%	66.8%	33.2%	57,141	35,074	61.4%	75.6%	24.4%	-6,094	-3.2%	
Greater Tzaneen	137,808	97,295	70.6%	64.7%	35.3%	133,114	81,469	61.2%	73.6%	26.4%	-15,826	-3.5%	
Maruleng	28,056	19,642	70.0%	65.2%	34.8%	26,819	16,289	60.7%	74.8%	25.2%	-3,353	-3.7%	
Sekhukhune District	277,368	137,045	49.4%	70.1%	29.9%	308,163	127,436	41.4%	78.3%	21.7%	-9,609	-1.4%	
Elias Motsoaledi	63,495	36,604	57.6%	67.3%	32.7%	66,763	33,181	49.7%	76.3%	23.7%	-3,423	-1.9%	
Ephraim Mogale	35,352	21,021	59.5%	71.6%	28.4%	36,817	18,679	50.7%	79.6%	20.4%	-2,342	-2.3%	
Fetakgomo Tubatse	120,255	56,451	46.9%	71.8%	28.2%	138,855	54,088	39.0%	79.5%	20.5%	-2,363	-0.9%	
Makhuduthamaga	58,266	22,969	39.4%	68.9%	31.1%	65,728	21,488	32.7%	77.4%	22.6%	-1,481	-1.3%	
Vhembe District	369,501	240,823	65.2%	65.0%	35.0%	368,796	210,387	57.0%	74.9%	25.1%	-30,436	-2.7%	
Collins Chabane	92,598	58,635	63.3%	64.4%	35.6%	92,294	50,825	55.1%	74.5%	25.5%	-7,810	-2.8%	
Makhado	115,405	77,901	67.5%	65.3%	34.7%	114,114	67,721	59.3%	75.0%	25.0%	-10,179	-2.8%	
Musina	42,107	32,713	77.7%	66.8%	33.2%	41,944	29,640	70.7%	75.7%	24.3%	-3,072	-2.0%	

			2016						2016 t	o 2021		
Area	Labour	Total employ informa	yed (formal + I sector)	Employed: formal sector	Employed informal sector	Labour	Total employed (formal + informal sector)		Employed: formal sector	Employed informal sector	Total employment	Total employment
	10100	Number	% of total labour force	% of total employed	% of total employed		Number	% of total labour force	% of total employed	% of total employed	numbers	AAGR (%)
Thulamela	119,392	71,575	59.9%	64.5%	35.5%	120,444	62,201	51.6%	74.7%	25.3%	-9,374	-2.8%
Waterberg District	263,407	205,920	78.2%	74.8%	25.2%	262,429	188,185	71.7%	82.1%	17.9%	-17,735	-1.8%
Bela-Bela	29,727	24,229	81.5%	66.5%	33.5%	28,274	21,274	75.2%	75.4%	24.6%	-2,955	-2.6%
Lephalale	43,302	35,679	82.4%	76.9%	23.1%	44,063	33,729	76.5%	83.5%	16.5%	-1,950	-1.1%
Modimolle-Mookgopong	50,303	42,195	83.9%	70.2%	29.8%	46,951	36,342	77.4%	78.3%	21.7%	-5,853	-2.9%
Mogalakwena	84,734	55,353	65.3%	73.3%	26.7%	86,807	50,300	57.9%	80.9%	19.1%	-5,053	-1.9%
Thabazimbi	55,341	48,464	87.6%	82.8%	17.2%	56,334	46,540	82.6%	88.3%	11.7%	-1,924	-0.8%

Source: Quantec Standardised Regional Data, Easy Data 2022

The provincial employment rate was 58.3% in 2021, compared to 66.3% in 2016, which reflects a negative average annual growth rate of -2.54% from 2016 to 2021. In 2021, the provincial employment rate was lower than the national employment rate of 65.5%. At a district level, Waterberg showed the highest employment rate in 2021 at 71.7%. Waterberg similarly showed the highest formal sector employment (82.1%), but also the lowest informal sector employment (17.9%).

In general, employment showed a declining trend in all districts from 2016 to 2021. The declining trend in the overall employment rate, especially towards 2020 and 2021, is to a large extent due to the unforeseen outbreak of the COVID-19 pandemic and the resultant negative impact on the job industry,

which was characterised by significant job retrenchments due to the impact of the pandemic on business operations and sustainability.

Although there was an increase in provincial formal sector employment from 2016 (69.8%) to 2021 (78.4%), provincial informal sector employment showed a declining trend from 2016 (30.2%) to 2021 (21.6%).

The unemployment trends for the five-year period from 2016 to 2021 is depicted in Table 14.

### Table 14: Unemployment trends, 2016 to 2021

		2016		2021	2016 to 2021			
Area	Total unemployed	Unemployment rate (unemployed as % of labour force)	Total unemployed	Unemployment rate (unemployed as % of labour force)	Total percentage point change in unemployment rate	Total unemployment growth in numbers	Total unemployment AAGR (%)	
South Africa	5,752,624	26.7%	7,658,219	34.5%	7.8%	1,905,594	5.9%	
Limpopo Province	550,466	33.7%	693,354	41.7%	8.0%	142,888	4.7%	
Capricorn District	116,221	30.2%	143,953	36.9%	6.7%	27,732	4.4%	
Blouberg	10,567	30.6%	12,477	38.4%	7.8%	1,910	3.4%	
Lepelle-Nkumpi	23,924	41.9%	28,661	48.3%	6.4%	4,736	3.7%	
Molemole	10,997	31.7%	13,520	39.8%	8.1%	2,523	4.2%	
Polokwane	70,733	27.4%	89,296	33.8%	6.4%	18,563	4.8%	
Mopani District	107,757	31.8%	136,022	40.8%	9.0%	28,264	4.8%	
Ba-Phalaborwa	18,394	30.0%	24,488	38.8%	8.7%	6,094	5.9%	
Greater Giyani	22,878	43.4%	27,292	51.4%	8.0%	4,414	3.6%	
Greater Letaba	17,558	29.9%	22,067	38.6%	8.7%	4,508	4.7%	
Greater Tzaneen	40,513	29.4%	51,645	38.8%	9.4%	11,132	5.0%	
Maruleng	8,414	30.0%	10,530	39.3%	9.3%	2,115	4.6%	
Sekhukhune District	140,323	50.6%	180,727	58.6%	8.1%	40,404	5.2%	
Elias Motsoaledi	26,891	42.4%	33,582	50.3%	7.9%	6,692	4.5%	
Ephraim Mogale	14,331	40.5%	18,138	49.3%	8.7%	3,807	4.8%	
Fetakgomo Tubatse	63,804	53.1%	84,767	61.0%	8.0%	20,963	5.8%	
Makhuduthamaga	35,297	60.6%	44,240	67.3%	6.7%	8,942	4.6%	
Vhembe District	128,678	34.8%	158,409	43.0%	8.1%	29,731	4.2%	
Collins Chabane	33,963	36.7%	41,469	44.9%	8.3%	7,506	4.1%	
Makhado	37,504	32.5%	46,393	40.7%	8.2%	8,888	4.3%	
Musina	9,394	22.3%	12,304	29.3%	7.0%	2,910	5.5%	
Thulamela	47,817	40.1%	58,243	48.4%	8.3%	10,426	4.0%	
Waterberg District	57,487	21.8%	74,244	28.3%	6.5%	16,757	5.2%	
Bela-Bela	5,498	18.5%	7,000	24.8%	6.3%	1,501	4.9%	
Lephalale	7,623	17.6%	10,334	23.5%	5.8%	2,712	6.3%	
Modimolle-Mookgopong	8,108	16.1%	10,609	22.6%	6.5%	2,500	5.5%	
Mogalakwena	29,381	34.7%	36,507	42.1%	7.4%	7,126	4.4%	
Thabazimbi	6,877	12.4%	9,794	17.4%	5.0%	2,917	7.3%	



Source: Quantec Standardised Regional Data, Easy Data 2022







The provincial unemployment rate increased significantly from 33.7% in 2016 to 41.7% in 2021 at an average annual growth rate of 4.7%. In both 2016 and 2021, the provincial unemployment rate was higher than the national unemployment rate. At a district level, unemployment showed the largest growth in the Sekhukhune and Waterberg districts from 2016 to 2021, both with average annual growth rates of 5.2%. In 2021 alone, unemployment was the highest in the Sekhukhune district at 58.6%.

At a local municipal level, unemployment was the highest in Makhuduthamaga (67.3%) and Fetakgomo Tubatse (61.0%), as illustrated in

Figure 21. The spatial distribution of total unemployed in number in 2021 on local municipal level is indicated in Figure 20.

The contributions of the various economic industries to total employment are given in Table 15.

Table 15:	Industry contribution to total	employment (formal	and informal), 2021
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Area	Agriculture	Mining and quarrying	Manufac- turing	Electricity, gas and water	Construction	Wholesale and retail trade, catering and accommodation	Transport, storage and communi- cation	Finance, insurance, real estate and business services	Government and community services	Households
South Africa	5.7%	3.2%	9.7%	0.5%	7.2%	22.0%	5.5%	16.1%	22.2%	8.0%
Limpopo Province	11.3%	7.2%	5.6%	0.6%	9.6%	21.5%	3.9%	8.8%	23.7%	7.8%
Capricorn District	7.8%	2.2%	6.6%	0.6%	9.3%	23.3%	4.6%	11.2%	27.4%	7.0%
Blouberg	16.6%	1.9%	3.8%	0.7%	10.9%	21.1%	3.7%	7.1%	25.0%	9.1%
Lepelle-Nkumpi	17.8%	2.0%	4.7%	0.5%	8.6%	21.0%	3.9%	7.6%	23.3%	10.4%
Molemole	9.7%	4.3%	7.9%	0.7%	9.1%	19.3%	4.5%	7.6%	32.0%	5.0%
Polokwane	5.2%	1.9%	7.0%	0.6%	9.3%	24.5%	4.7%	12.6%	27.6%	6.6%
Mopani District	12.5%	10.8%	5.3%	0.5%	8.9%	21.6%	3.3%	8.2%	21.5%	7.4%
Ba-Phalaborwa	9.2%	21.5%	5.5%	0.7%	7.5%	17.2%	2.3%	8.4%	19.3%	8.4%
Greater Giyani	14.8%	3.4%	4.7%	0.4%	8.4%	22.1%	3.6%	9.7%	26.7%	6.3%
Greater Letaba	11.4%	4.1%	5.7%	0.4%	9.9%	24.6%	3.4%	9.5%	25.7%	5.3%
Greater Tzaneen	11.5%	14.9%	5.7%	0.4%	9.6%	22.0%	3.5%	6.8%	17.7%	7.9%
Maruleng	21.3%	5.7%	4.2%	0.3%	7.4%	20.2%	3.1%	6.8%	19.4%	11.7%
Sekhukhune District	13.6%	16.3%	5.3%	0.5%	8.7%	18.9%	4.1%	7.4%	17.7%	7.3%
Elias Motsoaledi	20.5%	2.1%	5.0%	0.6%	10.3%	21.7%	4.9%	8.0%	20.2%	6.6%
Ephraim Mogale	30.4%	2.1%	4.7%	0.4%	9.2%	16.6%	4.1%	8.2%	15.5%	8.9%
Fetakgomo Tubatse	3.4%	39.5%	6.6%	0.3%	7.2%	14.6%	3.1%	5.8%	11.3%	8.3%
Makhuduthamaga	2.5%	9.0%	3.5%	0.7%	8.0%	26.0%	5.0%	8.9%	31.4%	5.0%
Vhembe District	13.0%	1.2%	4.3%	0.5%	10.0%	22.6%	4.3%	8.0%	28.5%	7.7%

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Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

Area	Agriculture	Mining and quarrying	Manufac- turing	Electricity, gas and water	Construction	Wholesale and retail trade, catering and accommodation	Transport, storage and communi- cation	Finance, insurance, real estate and business services	Government and community services	Households
Collins Chabane	9.1%	1.0%	4.3%	0.5%	10.1%	22.9%	4.4%	8.1%	32.0%	7.4%
Makhado	31.9%	2.5%	3.2%	0.3%	10.0%	20.2%	3.9%	7.5%	11.8%	8.7%
Musina	13.5%	0.9%	5.1%	0.4%	9.2%	23.6%	4.1%	7.7%	27.3%	8.1%
Thulamela	5.5%	1.1%	3.8%	0.7%	11.0%	22.0%	4.6%	8.7%	36.0%	6.8%
Waterberg District	12.1%	13.9%	5.9%	1.1%	11.1%	18.7%	3.0%	7.5%	17.0%	9.7%
Bela-Bela	15.0%	4.4%	4.5%	0.3%	10.5%	24.4%	2.0%	8.9%	20.5%	9.5%
Lephalale	17.4%	4.3%	5.4%	2.9%	17.7%	15.4%	2.8%	7.9%	14.4%	11.7%
Modimolle-Mookgopong	18.7%	1.6%	8.2%	0.5%	10.2%	21.5%	3.3%	7.2%	18.1%	10.6%
Mogalakwena	8.5%	10.0%	6.7%	0.9%	10.6%	22.3%	4.0%	8.7%	22.0%	6.3%
Thabazimbi	6.1%	47.4%	3.0%	0.5%	5.8%	10.5%	1.3%	4.6%	7.6%	13.2%

Source: Own calculations based on IHS Global Insight Regional Explorer, 2022. Zutari-CSIR collaboration for analysis

At a provincial level, the largest industry contributors to employment were the following:

- Government and community services (23.7%), slightly higher than the national contribution (22.2%)
- Wholesale and retail trade, catering and accommodation (21.5%), slightly lower than the national contribution (22.0%)
- Agriculture (11.3%), higher than the national contribution (5.7%)

At a district level, the following industries were dominant in their contribution to total employment (formal and informal) for 2021 in all districts:

- Government and community services
- Wholesale and retail trade, catering and accommodation

The following industries are dominant in the respective local municipalities, in terms of highest contributions (30%+) to total employment in 2021, and are also showed in Figure 23 to Figure 27:

Agriculture:

- Makhado (31.9%)
- Ephraim Mogale (30.4%)
- Mining and quarrying:
  - Thabazimbi (47.4%)
  - Fetakgomo Tubatse (39.5%)
- Government and community services:
  - Molemole (32.0%)
  - Makhuduthamaga (31.4%)
  - Collins Chabane (32.0%)
  - Thulamela (36.0%)



Figure 22: Total employment in agriculture industry, 2016



Figure 23: Total employment in agriculture industry, 2021



Figure 24: Distribution of employed in manufacturing industry, 2016



Figure 25: Distribution of employed in manufacturing industry 2021



Figure 26: Distribution of employed in mining & quarrying industry 2016


Figure 27: Distribution of employed in mining & quarrying industry 2021Figure 19

The average annual growth rate (AAGR) in terms of employment numbers of economic industries for the five-year period 2016 to 2021 are represented in Table 16

Area	Agriculture	Mining and quarrying	Manufac- turing	Electricity, gas and water	Construc- tion	Wholesale and retail trade, catering and accommodation	Transport, storage and communication	Finance, insurance, real estate and business services	Government and community services	Households
South Africa	-0.6%	0.0%	-2.7%	-3.4%	-2.9%	-1.4%	-0.4%	-1.0%	-1.1%	-2.1%
Limpopo Province	0.9%	2.5%	-2.0%	-5.2%	-2.8%	-3.1%	0.4%	-1.8%	-1.4%	-4.0%
Capricorn District	1.9%	5.4%	-1.0%	-5.2%	-1.7%	-2.0%	1.1%	-1.3%	-0.3%	-4.1%
Blouberg	1.6%	-3.6%	-1.3%	-5.8%	-1.6%	-2.0%	1.7%	-1.4%	-0.9%	-4.5%
Lepelle-Nkumpi	1.0%	4.8%	-2.0%	-7.1%	-2.1%	-2.7%	0.7%	-1.6%	-1.6%	-4.3%
Molemole	0.6%	4.6%	-0.5%	-6.7%	-3.1%	-4.0%	-0.5%	-2.8%	-2.0%	-5.0%
Polokwane	2.8%	6.7%	-0.9%	-4.7%	-1.4%	-1.6%	1.4%	-1.1%	0.3%	-3.9%
Mopani District	0.5%	4.4%	-1.9%	-5.8%	-3.3%	-3.4%	-0.6%	-2.2%	-2.1%	-4.3%
Ba-Phalaborwa	-4.6%	1.8%	-4.4%	-5.7%	-8.2%	-8.4%	-6.8%	-6.9%	-6.6%	-3.7%
Greater Giyani	5.9%	7.6%	3.1%	-6.3%	1.9%	2.0%	5.2%	2.0%	3.0%	-2.2%
Greater Letaba	1.6%	5.9%	-2.4%	-5.1%	-2.5%	-2.4%	-0.2%	-1.9%	-1.6%	-4.9%
Greater Tzaneen	0.6%	5.8%	-1.8%	-5.7%	-3.2%	-3.4%	-0.4%	-1.9%	-2.6%	-5.1%
Maruleng	-4.9%	2.3%	-7.7%	-6.5%	-8.8%	-9.6%	-6.8%	-5.5%	-7.8%	-4.7%
Sekhukhune District	-0.5%	-0.3%	-4.6%	-7.9%	-5.6%	-6.3%	-2.3%	-4.0%	-5.0%	-5.3%
Elias Motsoaledi	0.6%	-3.1%	-2.7%	-7.0%	-2.4%	-3.0%	0.4%	-2.8%	-2.1%	-4.5%
Ephraim Mogale	-0.2%	-1.4%	-2.1%	-7.4%	-2.8%	-3.9%	-0.3%	-2.4%	-3.0%	-4.8%
Fetakgomo Tubatse	-6.6%	-0.2%	-6.6%	-9.9%	-9.8%	-10.5%	-6.1%	-5.6%	-9.3%	-6.0%
Makhuduthamaga	-3.5%	1.9%	-4.5%	-8.3%	-7.2%	-7.6%	-3.9%	-5.4%	-5.9%	-6.2%
Vhembe District	2.1%	2.3%	-1.5%	-7.7%	-1.0%	-1.9%	2.2%	-0.7%	-0.5%	-3.6%
Collins Chabane	2.2%	3.7%	-1.4%	-7.9%	-1.1%	-1.8%	2.3%	-0.9%	-0.4%	-3.9%
Makhado	2.0%	1.8%	-1.6%	-6.5%	-0.7%	-2.3%	2.4%	0.8%	-0.6%	-1.7%

Table 16:	Five-year period ir	dustry average annu	al growth in emp	loyment, 2016 to 2021
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Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

Area	Agriculture	Mining and quarrying	Manufac- turing	Electricity, gas and water	Construc- tion	Wholesale and retail trade, catering and accommodation	Transport, storage and communication	Finance, insurance, real estate and business services	Government and community services	Households
Musina	2.0%	4.8%	-2.1%	-7.9%	-1.2%	-1.9%	1.9%	-1.0%	-0.7%	-3.9%
Thulamela	2.5%	-0.4%	-0.5%	-7.8%	-1.0%	-1.7%	2.5%	-0.8%	-0.2%	-4.0%
Waterberg District	-0.1%	2.2%	-2.6%	-2.4%	-4.3%	-4.5%	-1.0%	-2.9%	-2.6%	-3.5%
Bela-Bela	-0.4%	4.9%	-4.6%	-4.7%	-4.1%	-5.3%	-2.5%	-2.9%	-2.9%	-4.9%
Lephalale	0.7%	-5.7%	-2.9%	-0.5%	-4.2%	-4.2%	-0.8%	-1.4%	-1.9%	-0.8%
Modimolle-Mookgopong	0.7%	4.1%	-1.3%	-4.1%	-2.8%	-3.2%	0.5%	-2.1%	-1.9%	-3.9%
Mogalakwena	0.8%	5.2%	-1.3%	-5.0%	-3.0%	-3.0%	-0.2%	-2.6%	-1.7%	-4.6%
Thabazimbi	-5.6%	2.0%	-8.6%	-2.4%	-10.1%	-10.8%	-7.6%	-7.3%	-8.6%	-4.4%

The only two industries that showed a positive five-year period industry average annual growth in employment for the period 2016 to 2021, at a provincial level, were agriculture and mining and quarrying. All other industries showed negative growth for the five-year period. This corresponded with the national trend.

At a district level, a similar trend applied to the Capricorn district, except for the transport, storage and communication industry, which also showed a positive five-year period industry average annual growth in employment for the period 2016 to 2021 at 1.1%, as well as the Mopani and Vhembe districts.

Sekhukhune and Waterberg districts recorded negative five-year period industry average annual growth in employment for the period 2016 to 2021.

## 3.3.3 Economic concentration and diversification

The sectoral composition of economic activity in a region is a good indication of the level of diversification or concentration of a region's economy and can be measured by the so-called tress index. A tress index of zero represents a totally diversified economy. On the other hand, the higher the index (closer to 100), the more concentrated or vulnerable the region's economy is to exogenous variables such as adverse weather conditions, commodity price fluctuations, and so on. An increase in the tress index of a region reflects an increase in the dependence of the local economy on a single or a few economic activities. A recent trend in many regions is an increase in the tress index value of such regions. The diversity of the manufacturing industry, however, prevents an increase in the vulnerability of these economies.

The tress index of Limpopo for 2016 and 2021 is represented in Figure 28. The data indicates that, over the five-year period 2016 to 2021, the tress index of Limpopo increased, which indicates that the economy of the province became more concentrated and vulnerable to exogenous variables. This was also the case for the districts Capricorn, Mopani and Vhembe. Over the same period, the tress indices of the Sekhukhune and Waterberg districts decreased, which indicates that the economies of these districts are becoming more diverse.



Figure 28: Economic concentration and diversification, tress index 2016 and 2021

## 3.3.4 Competitive advantage

The competitive advantage of the individual economic sector/industry groups were analysed, summarised and classified according to the industry targeting classification system. This system is based on three indicators: the location quotient, overall growth at a local level, and the relative growth of the region as a whole in relation to the national economy from the leading/lagging analysis. Location quotient, leading/lagging and industry targeting analysis are discussed in the subsections that follow.

### 3.3.4.1 Location quotient

A location quotient (LQ) provides an indication of the comparative advantage of an economy in terms of its production and employment. An economy has a location quotient larger (smaller) than one, or a comparative advantage (disadvantage) in a particular sector when the share of that sector/industry in the specific economy is greater (less) than the share of the same sector/industry in the aggregate economy. Industries with values that are higher should, however, not be regarded as the only industries worth developing as latent potential in other industries is not addressed by this technique.

#### Table 17: Interpretation of location quotients

Location quotient	Label	Interpretation
Less than 0.75	Low	The area's needs are not being met by the sector. The region is probably importing goods and services in this sector.
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 this sector.
1.25 to 4.99	High	The sector is serving needs beyond the border, exporting goods and services in this sector to other areas.
More than 5.00	Very high	This is indicative of a very high level of local dependence on the sector, typically in a "single-industry" community.

The location was calculated at a national scale, where the location quotient is calculated by dividing the percentage share of the sector in the regional economy by the percentage share of that same sector in the national economy. The economic industries that formed part of the analysis include the following with per their respective Standard Industrial Classification (SIC) codes:

- Agriculture, forestry and fishing (SIC 1)
- Mining and quarrying (SIC 2)
- Manufacturing (SIC 3)
- Electricity, gas and water (SIC 4)
- Construction (SIC 5)
- Wholesale and retail trade, catering and accommodation (SIC 6)
- Transport, storage and communication (SIC 7)
- Finance, insurance, real estate and business services (SIC 8)
- General government, community, social and personal services (SIC 9)

**Note:** The tourism sector is primarily made up of four groups of industries: accommodation services, food and drink services, passenger transport (including vehicle hire and travel agents) and leisure activities (including cultural, sport and recreational) and spans across various SIC codes. The competitive analysis can therefore not include the tourism sector as an individual economic industry.

Area	Agriculture	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction	Wholesale and retail trade, catering and accommodation	Transport, storage and communication	Finance, insurance, real estate and business services	Government and community services
Limpopo Province	1.31	4.00	0.22	1.23	1.06	1.07	0.53	0.72	1.09
Capricorn District	0.67	0.40	1.29	0.36	1.14	1.30	1.30	1.11	1.27
Blouberg	0.88	0.41	0.87	0.39	0.93	0.93	0.73	1.68	1.17
Lepelle-Nkumpi	0.64	0.76	0.95	0.55	1.10	0.96	0.79	0.79	1.47
Molemole	1.36	0.54	1.28	0.50	1.23	1.46	1.50	0.73	1.18
Polokwane	0.58	0.35	1.35	0.33	1.15	1.34	1.38	1.14	1.26
Mopani District	1.54	1.22	0.74	2.38	0.88	0.83	0.76	0.88	0.84
Ba-Phalaborwa	0.24	3.35	0.20	0.49	0.35	0.22	0.39	0.65	0.24
Greater Giyani	2.46	0.15	0.40	8.19	0.93	0.72	0.49	0.66	1.14
Greater Letaba	1.87	0.49	0.99	0.57	1.24	1.33	1.06	1.05	1.08
Greater Tzaneen	1.66	0.67	1.26	0.46	1.11	1.13	1.02	1.20	0.97
Maruleng	0.40	3.56	0.18	0.36	0.28	0.24	0.81	0.32	0.22
Sekhukhune District	0.80	1.71	0.94	0.58	0.58	0.79	0.62	1.09	0.69
Elias Motsoaledi	1.32	0.58	1.68	0.70	0.81	1.20	0.99	1.29	0.97
Ephraim Mogale	2.14	0.52	1.19	0.59	1.17	1.35	1.21	0.81	1.13
Fetakgomo Tubatse	0.13	3.12	0.39	0.54	0.22	0.31	0.21	0.84	0.27
Makhuduthamaga	0.18	1.69	0.44	0.40	0.46	0.60	0.34	1.49	0.75
Vhembe District	1.06	0.38	0.97	1.16	1.27	1.08	1.14	1.19	1.23
Collins Chabane	0.89	0.29	1.01	1.29	1.31	1.08	1.05	1.23	1.29
Makhado	1.01	0.30	1.14	0.91	1.27	1.22	1.27	1.22	1.20
Musina	2.20	1.11	0.60	0.44	1.02	0.96	1.63	0.81	0.89
Thulamela	0.83	0.30	0.89	1.60	1.32	0.95	0.88	1.26	1.34

#### Table 18: Location quotient per industry, 2021

Area	Agriculture	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction	Wholesale and retail trade, catering and accommodation	Transport, storage and communication	Finance, insurance, real estate and business services	Government and community services
Waterberg District	1.05	2.34	0.80	0.54	0.80	0.61	0.74	0.62	0.55
Bela-Bela	1.30	1.48	1.04	0.61	1.26	0.97	1.45	0.90	0.62
Lephalale	0.69	3.20	0.43	0.84	0.44	0.30	0.41	0.50	0.28
Modimolle-Mookgopong	3.34	0.74	1.30	0.43	1.33	1.18	1.54	0.65	0.92
Mogalakwena	0.93	0.96	1.28	0.59	1.25	0.94	0.93	1.08	1.02
Thabazimbi	0.15	4.28	0.22	0.28	0.16	0.08	0.14	0.11	0.05

At a provincial level, three industries have a location quotient of less than 0.75, which implies that these areas' needs are not being met by the sector. The three industries with a low location quotient are manufacturing (location quotient = 0.22), transport, storage and communication (location quotient = 0.53) and finance, insurance, real estate and business services (location quotient = 0.72).

At a provincial level, four industries show a medium location quotient, which means that most of the local needs are being met by the sector. At a provincial level, only the mining and quarrying industry shows a high location quotient of 4.00, which indicates that the industry is responsible for exporting goods and services to other areas. The mining and quarrying industry therefore has a competitive advantage at a provincial level.

At a district level, the location quotient of most industries falls within the medium band between 0.75 and 1.24, which indicates that these industries mostly provide in the local needs of the community. The following industries per district showed high location quotients between 1.25 and 4.99, which indicates that the industries are strong enough to provide export products beyond the local border:

- Capricorn:
  - Manufacturing (1.29)
- Part C: Socio-Economic Analysis

- Wholesale and retail trade, catering and accommodation (1.30)
- Transport, storage and communication (1.30)
- Government and community services (1.27)
- Mopani:
  - Agriculture (1.54)
  - Electricity, gas and water (2.38)
- Sekhukhune:
  - Mining and quarrying (1.71)
- Vhembe:
  - Construction (1.27)
- Waterberg:
  - Mining and quarrying (2.34)

From the afore-mentioned it can be deduced that Capricorn has the highest number of industries with high location quotients.

Table 19 summarises Table 18 and outlines which districts have a comparative advantage (location quotient larger than one) in the various industries. It is evident that the province has a competitive advantage in the following industries:

- Mining and quarrying (high)
- Agriculture (high)
- Electricity, gas and water (medium)
- Government and community services (medium)
- Wholesale and retail trade, catering and accommodation (medium)
- Construction (medium)

Table 19:	Comparative advantage or	a provincial and	district level, 2021
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Industry	Area
Agriculture, forestry and fishing	<ul> <li>Limpopo</li> </ul>
	<ul> <li>Mopani District</li> </ul>
	<ul> <li>Vhembe District</li> </ul>
	<ul> <li>Waterberg District</li> </ul>
Mining and quarrying	Limpopo
	<ul> <li>Waterberg District</li> </ul>
	<ul> <li>Sekhukhune District</li> </ul>
	<ul> <li>Mopani District</li> </ul>
Manufacturing	Capricorn District
Electricity, gas and water	<ul> <li>Limpopo</li> </ul>
	<ul> <li>Mopani District</li> </ul>
	<ul> <li>Vhembe District</li> </ul>
Construction	<ul> <li>Limpopo</li> </ul>
	<ul> <li>Vhembe District</li> </ul>
	<ul> <li>Capricorn District</li> </ul>
Wholesale and retail trade,	Capricorn District
catering and accommodation	<ul> <li>Vhembe District</li> </ul>
Transport, storage and	Capricorn District
communication	<ul> <li>Vhembe District</li> </ul>
Finance, insurance, real estate	<ul> <li>Vhembe District</li> </ul>
and business services	Capricorn District
	<ul> <li>Sekhukhune District</li> </ul>

Industry	Area
General government, community, social and personal services	<ul><li>Limpopo</li><li>Capricorn District</li><li>Vhembe District</li></ul>

### 3.3.4.2 Leading/lagging analysis and industry targeting

Another way to look at the different industry sectors is to examine their employment or economic growth relative to growth in the overall economy at either a provincial or a national level by applying leading/lagging analysis. Industries are "leading" if they have a growth rate that is greater than the rate of growth in the overall economy, while they are "lagging" if they are growing more slowly. The sectors can then be classified according to the Carvalho Classification System, as shown in Table 20.

By using the outcome of the location quotient and leading/lagging analysis, the indicators for the individual industry groups can be summarised and classified according to the industry targeting classification system. This system is based on three indicators: the location quotient, overall growth at a local level, and the relative growth of the region as a whole in relation to the national economy from the leading/lagging analysis. The wording of the categories suggests the kinds of prospects for growth that one might expect in the future, so the classification scheme is somewhat forward-looking.

Table 20: Leading/lagging analysis and industry targeting classification system

Leading/Lagging Analysis: Carvalho Classification System	Industry Targeting Classification System
Driving	Current strength
Accelerating	Current strength
Rising	Emerging strength
Promising	High priority retention target
Yielding	High priority retention target
Evolving	Prospects limited by external trends

Part C: Socio-Economic Analysis

Leading/Lagging Analysis: Carvalho Classification System	Industry Targeting Classification System
Transitional	Prospects limited by external trends
Moderate	Prospects limited by weak base & external trends
Modest	Prospects limited by weak base & declining competitiveness
Challenging	Prospects limited by external trends & declining competitiveness
Vulnerable	Prospects limited by external trends & declining competitiveness
Marginal	Prospects limited overall

In the previous section, the location quotient was determined for the nine broad economic industries per district and local municipality at a provincial scale to give a high-level indication of each municipality's comparative advantage. Because the ten broad industry categories and trends do not reveal what is happening in specific industries, industry targeting will be executed at the sub-industry level for each of the district municipalities relative to the provincial economy to better analyse industry growth and decline in the province and its potential competitive advantages. Table 21 outlines the detailed outcome of the industry targeting classification for Limpopo per industry and sub-industry and indicates the industries and sub-industries that are current strengths, emerging strengths and high-priority retention targets as follows:

- Industry: Agriculture (current strength)
- Sub-industry: Agriculture and hunting (current strength)
- Sub-industry: Forestry and logging (current strength)
- Sub-industry: Fishing, operation of fish farms (emerging strength)
- Industry: Mining and quarrying (high-priority retention target)
- Sub-industry: Mining of gold and uranium ore (high-priority retention target)
- Sub-industry: Mining of metal ores (current strength)
- Sub-industry: Other mining and quarrying (including 22) (current strength)
- Sub-industry: Finance and insurance (emerging strength)
- Sub-industry: Other business activities (emerging strength)

#### Table 21: Limpopo – Leading/lagging analysis and industry targeting classification system outcome per industry and sub-industry

Industry and sub-industry	Location quotient (LQ) 2021	Leading/Lagging Analysis: Carvalho Classification System	Industry Targeting Classification System
1 Agriculture	1.31	Driving	Current strength
11 Agriculture and hunting	1.38	Driving	Current strength
12 Forestry and logging	1.21	Accelerating	Current strength
13 Fishing, operation of fish farms	0.56	Rising	Emerging strength
2 Mining and quarrying	4.00	Promising	High priority retention target

Industry and sub-industry	Location quotient (LQ) 2021	Leading/Lagging Analysis: Carvalho Classification System	Industry Targeting Classification System
21 Mining of coal and lignite	0.71	Modest	Prospects limited by weak base & declining competitiveness
23 Mining of gold and uranium ore	0.77	Yielding	High priority retention target
24 Mining of metal ores	5.77	Driving	Current strength
25-29 Other mining and quarrying (incl 22)	2.73	Driving	Current strength
3 Manufacturing	0.22	Marginal	Prospects limited overall
30 Food, beverages and tobacco products	0.37	Moderate	Prospects limited by weak base & external trends
31 Textiles, clothing and leather goods	0.17	Marginal	Prospects limited overall
32 Wood and wood products	0.21	Marginal	Prospects limited overall
33 Fuel, petroleum, chemical and rubber products	0.14	Marginal	Prospects limited overall
34 Other non-metallic mineral products	0.23	Marginal	Prospects limited overall
35 Metal products, machinery and household appliances	0.16	Marginal	Prospects limited overall
36 Electrical machinery and apparatus	0.21	Marginal	Prospects limited overall
37 Electronic, sound/vision, medical & other appliances	0.13	Marginal	Prospects limited overall
38 Transport equipment	0.10	Moderate	Prospects limited by weak base & external trends
39 Furniture and other items NEC and recycling	0.25	Marginal	Prospects limited overall
4 Electricity, gas and water	1.23	Vulnerable	Prospects limited by external trends & declining competitiveness
41 Electricity, gas, steam and hot water supply	0.81	Vulnerable	Prospects limited by external trends & declining competitiveness
42 Collection, purification and distribution of water	2.67	Evolving	Prospects limited by external trends
5 Construction	1.06	Vulnerable	Prospects limited by external trends & declining competitiveness
6 Wholesale and retail trade, catering and accommodation	1.07	Vulnerable	Prospects limited by external trends & declining competitiveness
61 Wholesale and commission trade	1.01	Vulnerable	Prospects limited by external trends & declining competitiveness
62 Retail trade and repairs of goods	1.24	Transitional	Prospects limited by external trends
63 Sale and repairs of motor vehicles, sale of fuel	0.89	Vulnerable	Prospects limited by external trends & declining competitiveness
64 Hotels and restaurants	0.84	Vulnerable	Prospects limited by external trends & declining competitiveness
7 Transport, storage and communication	0.53	Marginal	Prospects limited overall

Industry and sub-industry	Location quotient (LQ) 2021	Leading/Lagging Analysis: Carvalho Classification System	Industry Targeting Classification System
71-72 Land and Water transport	0.61	Marginal	Prospects limited overall
73-74 Air transport and transport supporting activities	0.37	Marginal	Prospects limited overall
75 Post and telecommunication	0.50	Marginal	Prospects limited overall
8 Finance, insurance, real estate and business services	0.72	Moderate	Prospects limited by weak base & external trends
81-83 Finance and Insurance	0.44	Rising	Emerging strength
84 Real estate activities	1.39	Evolving	Prospects limited by external trends
85-88 Other business activities	0.44	Rising	Emerging strength
9 Government and community services	1.09	Transitional	Prospects limited by external trends
91 Public administration and defence activities	1.02	Transitional	Prospects limited by external trends
92 Education	1.81	Evolving	Prospects limited by external trends
93 Health and social work	0.75	Transitional	Prospects limited by external trends
94-99 Other service activities	0.62	Moderate	Prospects limited by weak base & external trends

The agricultural and mining and quarrying industries show current strength in the overall provincial economy, either through driving or accelerating the provincial economy.

Some industries indicate emerging strengths (e.g., finance and insurance and other business activities) and one sub-industry indicates emerging strength (e.g. fishing, operation of fish farms).

Table 22 outlines the overall outcome of the industry targeting classification for the per industry and sub-industry for each of the five district municipalities.

Industry and sub-industry	Limpopo Province	Capricorn District	Mopani District	Sekhukhune District	Vhembe District	Waterberg District
1 Agriculture	Current strength	Emerging strength	Current strength	Prospects limited by external trends	Current strength	Prospects limited by external trends
11 Agriculture and hunting	Current strength	Emerging strength	Current strength	Prospects limited by external trends	Current strength	Prospects limited by external trends
12 Forestry and logging	Current strength	Prospects limited by weak base & external trends	Current strength	Prospects limited by weak base & external trends	Current strength	Prospects limited by weak base & external trends
13 Fishing, operation of fish farms	Emerging strength	Prospects limited by external trends	Current strength	Prospects limited by external trends	Emerging strength	Prospects limited by weak base & external trends
2 Mining and quarrying	High priority retention target	Emerging strength	Current strength	Prospects limited by external trends	Emerging strength	Prospects limited by external trends
21 Mining of coal and lignite	Prospects limited by weak base & declining competitiveness	Emerging strength	Prospects limited by weak base & external trends	Current strength	Emerging strength	Current strength
23 Mining of gold and uranium ore	High priority retention target	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited overall	Prospects limited overall
24 Mining of metal ores	Current strength	Emerging strength	Current strength	Prospects limited by external trends	Emerging strength	Prospects limited by external trends
25-29 Other mining and quarrying (incl 22)	Current strength	Emerging strength	Prospects limited by external trends	Prospects limited by external trends	Current strength	Prospects limited by external trends
3 Manufacturing	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited by external trends & declining competitiveness
30 Food, beverages and tobacco products	Prospects limited by weak base & external trends	Current strength	Prospects limited by weak base & external trends	Prospects limited by external trends	Current strength	Prospects limited by weak base & external trends
31 Textiles, clothing and leather goods	Prospects limited overall	High priority retention target	Prospects limited by weak base & declining competitiveness	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness
32 Wood and wood products	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness	Prospects limited overall	High priority retention target	Prospects limited overall
33 Fuel, petroleum, chemical and rubber products	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited by external trends & declining competitiveness

### Table 22: Industry targeting classification system outcome per industry and sub-industry at provincial and district level

Industry and sub-industry	Limpopo Province	Capricorn District	Mopani District	Sekhukhune District	Vhembe District	Waterberg District
34 Other non-metallic mineral products	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited by external trends & declining competitiveness	Prospects limited by weak base & declining competitiveness	Prospects limited by external trends & declining competitiveness
35 Metal products, machinery and household appliances	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited by external trends & declining competitiveness
36 Electrical machinery and apparatus	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness
37 Electronic, sound/vision, medical & other appliances	Prospects limited overall	High priority retention target	Prospects limited by weak base & declining competitiveness	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited overall
38 Transport equipment	Prospects limited by weak base & external trends	High priority retention target	Prospects limited overall	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness
39 Furniture and other items NEC and recycling	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited overall
4 Electricity, gas and water	Prospects limited by external trends & declining competitiveness	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited by external trends & declining competitiveness	Prospects limited overall
41 Electricity, gas, steam and hot water supply	Prospects limited by external trends & declining competitiveness	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited by external trends & declining competitiveness
42 Collection, purification and distribution of water	Prospects limited by external trends	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited by external trends & declining competitiveness	Prospects limited overall
5 Construction	Prospects limited by external trends & declining competitiveness	High priority retention target	High priority retention target	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness
6 Wholesale and retail trade, catering and accommodation	Prospects limited by external trends & declining competitiveness	High priority retention target	High priority retention target	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited overall

Industry and sub-industry	Limpopo Province	Capricorn District	Mopani District	Sekhukhune District	Vhembe District	Waterberg District
61 Wholesale and commission trade	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited overall	Prospects limited overall	High priority retention target	Prospects limited overall
62 Retail trade and repairs of goods	Prospects limited by external trends	High priority retention target	High priority retention target	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited overall
63 Sale and repairs of motor vehicles, sale of fuel	Prospects limited by external trends & declining competitiveness	High priority retention target	High priority retention target	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited overall
64 Hotels and restaurants	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited by external trends & declining competitiveness	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited by external trends & declining competitiveness
7 Transport, storage and communication	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness	Prospects limited overall	High priority retention target	Prospects limited overall
71-72 Land and Water transport	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited by external trends & declining competitiveness
73-74 Air transport and transport supporting activities	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness	Prospects limited by weak base & declining competitiveness	High priority retention target	Prospects limited overall
75 Post and telecommunication	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness
8 Finance, insurance, real estate and business services	Prospects limited by weak base & external trends	Current strength	Prospects limited by external trends	Prospects limited by external trends	Current strength	Prospects limited by weak base & external trends
81-83 Finance and Insurance	Emerging strength	Current strength	Emerging strength	Prospects limited by weak base & external trends	Current strength	Prospects limited by weak base & external trends
84 Real estate activities	Prospects limited by external trends	Prospects limited by external trends & declining competitiveness	Prospects limited by external trends & declining competitiveness	High priority retention target	High priority retention target	Prospects limited overall

Industry and sub-industry	Limpopo Province	Capricorn District	Mopani District	Sekhukhune District	Vhembe District	Waterberg District
85-88 Other business activities	Emerging strength	Current strength	Current strength	Prospects limited by weak base & external trends	Current strength	Prospects limited by weak base & external trends
9 Government and community services	Prospects limited by external trends	Current strength	Current strength	Prospects limited by weak base & external trends	Current strength	Prospects limited by weak base & external trends
91 Public administration and defence activities	Prospects limited by external trends	Current strength	Current strength	Prospects limited by weak base & external trends	Current strength	Prospects limited by weak base & external trends
92 Education	Prospects limited by external trends	Current strength	Current strength	Prospects limited by external trends	Current strength	Prospects limited by weak base & external trends
93 Health and social work	Prospects limited by external trends	High priority retention target	High priority retention target	Prospects limited overall	High priority retention target	Prospects limited overall
94-99 Other service activities	Prospects limited by weak base & external trends	High priority retention target	Prospects limited overall	Prospects limited overall	High priority retention target	Prospects limited overall

At a provincial level, several industries show strengths, mostly in the agricultural and mining and quarrying industries. These are, however, overshadowed by most industries' being characterised by limiting and declining trends in growth, development and competitiveness, thereby having a lagging impact on, and posing a threat to, future economic growth and development.

At a district level, Sekhukhune and Waterberg have the most limiting prospects in terms of economic growth and development, with most industries characterised by limiting or declining industry trends. In both districts, only the sub-industry of the mining of coal and lignite shows current strengths.

Mopani and Vhembe have strong industries in agriculture and mining and quarrying, while Capricorn shows emerging strengths in these two industries. All three districts show current strengths in government and community services, while Capricorn and Vhembe also show current strength in finance, insurance, real estate and business services. The same three districts are also characterised by high-priority retention targets in several industries.

# 3.4 Economic activities

# 3.4.1 Agriculture

Agriculture contributes to economic development through food (and other commodity) production, providing a market for produced goods, providing employment, and serving as a net exporter of agricultural products. Primary commercial agriculture contributed about 3% and 2.7% respectively of South Africa's and Limpopo's GVA in 2021 (current prices). However, through strong linkages to other sectors of the economy, it is estimated to comprise a much more significant portion of the GVA. Agriculture's prominent, indirect role in the economy is a function of backward and forward linkages to other sectors. Purchases of goods such as fertilisers, chemicals and agricultural implements form backward linkages with the manufacturing sector, while forward linkages are established through the supply of raw materials to the manufacturing industry. A significant portion of agricultural output is used as intermediate products in the sector. Agriculture is, therefore, a crucial sector and serves as an important engine of growth for the rest of the economy. South African agriculture is comprised of mainly two categories: a predominantly subsistence-oriented sector in the rural areas (small scale), and a welldeveloped commercial sector (large scale).

Agriculture has several direct and indirect links to settlements, as it contributes to the social and economic stability of an area. These include impacts through the direct employment of communities in and around settlements, the delivery of goods and products to secondary industries depending on agriculture, and investments in infrastructure. In 2021, the agriculture industry contributed 11.3% of Limpopo's total employment (approximately 130,000 jobs). Agriculture is also an important purchaser of intermediate goods and services, which is a key driver of growth for the rest of the economy in a settlement.

Several drivers of vulnerability, including climate change and the late load shedding, have an impact on the ability of farming to remain productive, often

interactive as multiple stressors. These relate largely to external factors that farmers cannot control, such as rising input costs, the oil price and exchange rate, a lack of subsidies and extension support, crimes rates and increasing tenure insecurity (land reform), as well as a decline in the health and functioning of natural resources.

Sector insights<sup>5</sup>

- The contribution of Limpopo agriculture to national agriculture is notable and discussed further in this section. Further Limpopo's fruits and vegetables form an important part of South Africa's export basket and more than 45% of the annual turnover of the Johannesburg Fresh Produce Market originates in the fertile province.
- Agri-processing has significant potential to expand in every subsector.
- Cotton growing is experiencing a renewal in the province.
- About half of the country's annual production of 120 000 tons of avocadoes is produced in two Limpopo regions, Letaba and Tzaneen. Exports are rising exponentially. In response to this demand, and the potential of the Chinese market, almost 1 000ha per year of new land is being planted with avocadoes in South Africa.
- The same amount of new macadamia planting is underway every year, according to the Macadamias South Africa (SAMAC), adding to the existing 19 000ha.
- Limpopo grows three-quarters of South Africa's mangoes and two-thirds of its tomatoes.
- Notable district activities include: The Waterberg district produces large quantities of red meat; Capricorn region produces significant potatoes, Vhembe and Mopani districts specialise in citrus and subtropical fruits; The Sekhukhune region in the south-east produces grain and the marula fruit that goes into Amarula cream liqueur.
- All major retailers in South Africa have enterprise development programmes which connect farmers to suppliers. In Limpopo Woolworths support independent farmers by buying their produce, Spar channel

<sup>&</sup>lt;sup>5</sup> https://issuu.com/globalafricanetwork/docs/lb 2020 2 /s/10766546

Part C: Socio-Economic Analysis

produce from smallholders through its Fresh Assembly point in Mopani district.

## 3.4.1.1 Industry analysis

The agriculture (agriculture, forestry and fishing (SIC 1)) industry can be subdivided into three sub-industries:

- Agriculture (SIC 11) Crop and animal production, hunting and related service activities.
- Forestry and logging (SIC 12).
- Fishing and aquaculture (SIC 13).

Based on the outcome of the Leading/Lagging Analysis and Industry Targeting Classification System at a provincial level, the agriculture industry and sub-industries are: (refer to Table 22 and Table 23).

- Industry: Agriculture (current strength).
- Sub-industry: Agriculture and hunting (current strength).
- Sub-industry: Forestry and logging (current strength).
- Sub-industry: Fishing, operation of fish farms (emerging strength).

The main current and emerging strength are within the Mopani, Vhembe and to a lesser extent the Capricorn Districts (see Table 22 and Table 23).

Industry and sub-industry	Limpopo Province	Capricorn District	Mopani District	Sekhukhune District	Vhembe District	Waterberg District
1 Agriculture	Current strength	Emerging strength	Current strength	Prospects limited by external trends	Current strength	Prospects limited by external trends
11 Agriculture and hunting	Current strength	Emerging strength	Current strength	Prospects limited by external trends	Current strength	Prospects limited by external trends
12 Forestry and logging	Current strength	Prospects limited by weak base & external trends	Current strength	Prospects limited by weak base & external trends	Current strength	Prospects limited by weak base & external trends
13 Fishing, operation of fish farms	Emerging strength	Prospects limited by external trends	Current strength	Prospects limited by external trends	Emerging strength	Prospects limited by weak base & external trends

#### Table 23: Agriculture industry and sub-industry: Industry Targeting Classification System Outcome

From Table 23, it is evident that the agriculture industry is a current strength in Limpopo, with the Mopani and Vhembe districts taking the lead in the agriculture industry. Capricorn shows an emerging strength in the agriculture industry, while Sekhukhune and Waterberg have limited prospects in this industry.

Agricultural protected areas, existing land use, and land capability are detrimental to the agricultural sector and its development. These factors are discussed in more detail in the bio-physical environment in Sections 2.4.1 and 2.4.2.

Table 24 outlines the performance over the period 2016 to 2021 of the industry. The agriculture and hunting sub-industry is the most prominent of the three sub-industries and contributes more than 80% to all the district and local municipalities' total agriculture industry.

Part C: Socio-Economic Analysis

		GVA (R ʻı	millions, current	prices 2021)		GVA AAGR 2016 to 2021 (constant prices)			
Area	Agriculture Industry Total GVA	Agriculture Industry contribution to total GVA	Sub-industry contribution: Agriculture and hunting	Sub-industry contribution: Forestry and logging	Sub-industry contribution: Fishing, operation of fish farms	Agriculture Industry	Sub-industry: Agriculture and hunting	Sub-industry: Forestry and logging	Sub-industry: Fishing, operation of fish farms
Limpopo Province	12,738	2.7%	89.9%	5.8%	4.3%	7.7%	7.8%	3.5%	8.3%
Capricorn District	2,950	3.0%	83.6%	5.3%	11.2%	7.8%	8.0%	2.9%	8.3%
Blouberg	234	2.2%	94.1%	3.8%	2.1%	9.1%	9.2%	4.7%	10.0%
Lepelle-Nkumpi	215	2.9%	80.7%	7.3%	12.0%	6.7%	6.9%	2.0%	7.3%
Molemole	511	2.1%	89.0%	5.6%	5.4%	7.1%	7.3%	2.3%	7.7%
Polokwane	1,989	4.4%	81.2%	5.1%	13.6%	8.0%	8.1%	3.1%	8.4%
Mopani District	4,291	1.9%	90.1%	7.5%	2.3%	9.1%	9.4%	4.0%	9.3%
Ba-Phalaborwa	133	4.5%	95.1%	3.5%	1.4%	-1.7%	-1.6%	-5.9%	-1.6%
Greater Giyani	1,688	0.6%	91.9%	6.1%	2.0%	15.9%	16.1%	11.0%	16.8%
Greater Letaba	673	8.0%	93.6%	6.0%	0.4%	7.7%	7.9%	3.0%	8.3%
Greater Tzaneen	1,718	6.1%	86.4%	10.0%	3.5%	6.1%	6.5%	1.6%	6.8%
Maruleng	78	5.4%	94.4%	4.0%	1.5%	-2.8%	-2.7%	-6.7%	-2.2%
Sekhukhune District	2,498	0.9%	89.2%	8.9%	1.9%	8.1%	8.4%	4.0%	10.1%
Elias Motsoaledi	523	2.2%	86.1%	11.0%	2.8%	8.8%	9.2%	4.4%	10.2%
Ephraim Mogale	810	4.3%	90.8%	8.7%	0.5%	8.1%	8.4%	3.5%	8.8%
Fetakgomo Tubatse	553	6.9%	96.6%	3.2%	0.2%	6.4%	6.5%	2.0%	8.6%
Makhuduthamaga	611	0.3%	83.1%	12.5%	4.4%	9.3%	9.8%	4.8%	10.3%
Vhembe District	1,022	0.5%	93.4%	1.1%	5.6%	7.0%	7.1%	-0.4%	6.5%
Collins Chabane	579	3.5%	94.0%	1.0%	5.0%	8.5%	8.5%	3.5%	8.9%
Makhado	339	3.0%	94.1%	0.5%	5.4%	7.8%	7.8%	2.9%	8.1%
Musina	69	3.4%	84.6%	3.8%	11.6%	-3.1%	-3.0%	-7.7%	-2.2%
Thulamela	37	7.2%	92.7%	2.4%	4.9%	2.0%	2.1%	-2.6%	2.3%

### Table 24: Agriculture industry and sub-industry economic context and performance, 2016 to 2021

		GVA (R 'ı	millions, current	prices 2021)		GVA AAGR 2016 to 2021 (constant prices)			
Area	Agriculture Industry Total GVA	Agriculture Industry contribution to total GVA	Sub-industry contribution: Agriculture and hunting	Sub-industry contribution: Forestry and logging	Sub-industry contribution: Fishing, operation of fish farms	Agriculture Industry	Sub-industry: Agriculture and hunting	Sub-industry: Forestry and logging	Sub-industry: Fishing, operation of fish farms
Waterberg District	1,977	2.9%	97.8%	1.4%	0.9%	4.5%	4.6%	-1.5%	5.7%
Bela-Bela	198	2.6%	97.4%	2.1%	0.5%	4.0%	4.0%	-0.8%	4.3%
Lephalale	279	3.7%	98.2%	1.0%	0.8%	1.1%	1.1%	-3.4%	1.4%
Modimolle-Mookgopong	907	1.7%	98.6%	0.7%	0.6%	6.0%	6.0%	1.1%	6.3%
Mogalakwena	511	10.4%	96.5%	1.9%	1.6%	6.6%	6.7%	1.8%	7.0%
Thabazimbi	83	2.8%	95.4%	4.5%	0.1%	-6.1%	-6.0%	-10.3%	-5.2%

At a district level, the overall agriculture industry had the highest contribution to the total GVA in the Capricorn and Waterberg districts. The sub-industry agriculture and hunting had the highest contribution to the total GVA in the Waterberg and Vhembe districts. The sub-industry forestry and logging features most prominently in the Sekhukhune and Mopani districts, with contribution to total GVA 8.9% and 7.5% respectively. The sub-industry fishing, operation of fish farms shows the highest contribution to the total GVA in the Capricorn district.

At a municipal level, over the five-year period 2016 to 2021, this sub-industry experienced significant growth, specifically in the Greater Giyani, Thulamela, Blouberg and the Collin Chabane municipalities. The forestry and logging sub-industry is concentrated mostly in the Mopani and Vhembe districts in the following local municipalities:

- Thulamela
- Collins Chabane

- Greater Tzaneen
- Makhado
- Lepelle-Nkumpi
- Greater Giyani
- Greater Letaba

The sub-industry fishing, operation of fish farms is concentrated in the Polokwane, Lepelle-Nkumpi and the Fetakgomo Tubatse municipalities. Large growth in this sub-industry's GVA is evident from 2016 to 2021 (more than 10%) occurred in the Greater Giyani, Thulamela, Collin Chabane and Blouberg municipalities.

Table 25 highlights industry and sub-industry employment as well as comparative advantage

#### Table 25: Agriculture industry and sub-industry employment and comparative advantage, 2016 to 2021

		Employment		Loca	ation Quotient (LQ) / C	omparative Avantage	2021
	Agriculture Industry Total Employed 2021	Agriculture Industry contribution to total employment 2021	Agriculture Industry Employment AAGR 2016 to 2021	Agriculture Industry	Sub-industry: Agriculture and hunting	Sub-industry: Forestry and logging	Sub-industry: Fishing, operation of fish farms
Limpopo Province	130,570	11.3%	0.9%	1.3	1.4	1.2	0.6
Capricorn District	25,796	7.8%	1.9%	0.7	0.6	0.6	1.7
Blouberg	3,047	16.6%	1.6%	0.9	0.9	0.6	0.4
Lepelle-Nkumpi	6,800	17.8%	1.0%	0.6	0.6	0.8	1.8
Molemole	3,387	9.7%	0.6%	1.4	1.3	1.3	1.7
Polokwane	12,562	5.2%	2.8%	0.6	0.5	0.5	1.8
Mopani District	28,968	12.5%	0.5%	1.5	1.5	2.0	0.8
Ba-Phalaborwa	3,399	9.2%	-4.6%	0.2	0.3	0.1	0.1
Greater Giyani	7,636	14.8%	5.9%	2.5	2.5	2.6	1.2
Greater Letaba	4,826	11.4%	1.6%	1.9	1.9	1.9	0.2
Greater Tzaneen	9,730	11.5%	0.6%	1.7	1.6	2.9	1.4
Maruleng	3,377	21.3%	-4.9%	0.4	0.4	0.3	0.1
Sekhukhune District	15,918	13.6%	-0.5%	1.1	1.1	1.6	0.5
Elias Motsoaledi	8,708	20.5%	0.6%	0.9	0.9	1.7	0.6
Ephraim Mogale	5,411	30.4%	-0.2%	1.0	1.0	1.5	0.1
Fetakgomo Tubatse	1,430	3.4%	-6.6%	2.2	2.3	1.2	0.1
Makhuduthamaga	370	2.5%	-3.5%	0.8	0.8	1.8	0.9
Vhembe District	35,065	13.0%	2.1%	0.8	0.8	0.1	1.0
Collins Chabane	5,684	9.1%	2.2%	1.3	1.4	0.2	1.5
Makhado	12,189	31.9%	2.0%	2.1	2.2	0.2	2.6
Musina	13,296	13.5%	2.0%	0.1	0.1	0.1	0.4
Thulamela	3,896	5.5%	2.5%	0.2	0.2	0.1	0.2
Waterberg District	24,822	12.1%	-0.1%	1.0	1.1	0.2	0.2

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

		Employment		Location Quotient (LQ) / Comparative Avantage 2021				
	Agriculture Industry Total Employed 2021	Agriculture Industry contribution to total employment 2021	Agriculture Industry Employment AAGR 2016 to 2021	Agriculture Industry	Sub-industry: Agriculture and hunting	Sub-industry: Forestry and logging	Sub-industry: Fishing, operation of fish farms	
Bela-Bela	2,045	15.0%	-0.4%	1.3	1.4	0.5	0.1	
Lephalale	7,454	17.4%	0.7%	0.7	0.7	0.1	0.1	
Modimolle-Mookgopong	6,768	18.7%	0.7%	3.3	3.6	0.4	0.5	
Mogalakwena	6,246	8.5%	0.8%	0.9	1.0	0.3	0.3	
Thabazimbi	2,309	6.1%	-5.6%	0.2	0.2	0.1	0.0	

At a district level, the agriculture industry shows the highest contribution to total employment in the Sekhukhune district at 13.6%. The highest subindustry comparative advantage for the three districts that show significant comparative advantage was the following:

- Capricorn:
  - Sub-industry: fishing, operation of fish farms (location quotient = 1.7)
- Mopani:
  - Sub-industry: forestry and logging (location quotient = 2.0)
- Sekhukhune:
  - Sub-industry: forestry and logging (location quotient = 1.6)

Having analysed the economic trends in the agricultural sector, the development of the agricultural sector is realised and promoted through various provincial plans, programmes and initiatives such as:

- the Agriculture and Agro-processing Master Plan (AAMP) as a national policy instrument
- Limpopo Revitalisation of Agriculture and Agro-processing Value Chain (RAAVC), adopted by the Provincial Government in June 2021 aims to

maximise agricultural production to support agro-processing expansion, contribute towards the agricultural industrialisation of the province, increase job opportunities, increase food security and improve rural livelihoods.

- the five agricultural development zones where support will be given to more than 1,000 small-scale farmers to promote production in the sector.
- Agrarian Expanded Public Works Programme may not have a significant spatial focus but is notably a programme that will enhance the sector through its agricultural skills development programme and bi-lateral with the commercial farming sectors.

## 3.4.1.2 Enabling infrastructure

The sustainability of agriculture and its expansion potential is negatively impacted by the deteriorating infrastructure in the province that calls for a capable state intervention into the following matters:

- Energy security: the ongoing electricity supply crisis and loadshedding is crippling and threatening agricultural production and the entire food supply chain. Cold chains for the necessary export are under serious threat. Alternative energy sources are expensive and cannot be afforded.
- The maintenance of road infrastructure: The condition of road infrastructure in the province is negatively impacting accessibility, operations, competitiveness and safety and security in the sector. Significant loss of earnings is due to produce being damaged during transportation and breakdown of trucks.
- Rail and harbour infrastructure: The insufficient rail system is not supporting agrarian exports from the province.
- Access to markets: Access to functional local and national markets is a significant problem for both emerging and commercial farmers.

## 3.4.1.3 Impact of COVID

The impact of COVID on the agricultural sector can be summarised as follows:

- Supply chain disruptions: The pandemic has disrupted supply chains for agricultural inputs, such as fertilizers and seeds, as well as for outputs, such as crops and livestock. This has led to shortages of key inputs and reduced market access for farmers, particularly in rural areas.
- Labour shortages: The pandemic has also led to labour shortages, as many migrant workers have been unable to travel to Limpopo due to travel restrictions. This has led to labour shortages on farms and in processing facilities, which has affected productivity and output.
- Market disruptions: The pandemic has disrupted markets for agricultural products, particularly for export-oriented crops such as citrus and

avocados. This has led to price volatility and reduced demand for certain products, which has affected the profitability of farmers.

- Reduced access to finance: The pandemic has also made it more difficult for farmers to access finance, as banks and other lenders have become more risk-averse. This has made it more difficult for farmers to invest in their businesses and adapt to changing market conditions.
- Increased food insecurity: The pandemic has led to increased food insecurity in Limpopo and other parts of South Africa, as many households have experienced income losses and reduced access to food. This has highlighted the importance of the agricultural sector in providing food security and supporting livelihoods.

## 3.4.1.4 Development opportunities

The LDP 2020-2025 has identified a number of opportunities to develop the agriculture industry, with emphasis on technological advancement of the industry through smart agriculture, precision farming, and strong emphasis on skills development and training of especially youth. Additional opportunities exist in the following:

- There is potential for beneficiation, manufacturing, and value chain development within the sector in support of the provincial industrialisation path and the identified SEZ, industrial hubs and industrial parks.
- As a contributor to employment (11.3%), the agricultural sector can help to sustainably utilize large tracts of land in the province, which have high agricultural potential. The identified high potential agricultural land (irrigated and rain-fed), has been illustrated in the socio-economic section of the report. To this end, it is essential to protect such land from development by competing land uses such as mining, manufacturing, and human settlements.
- Promoting tourism related to hunting and conservation can provide new revenue streams for local communities and support the conservation of wildlife.

# 3.4.2 Mining

Table 27 outlines the economic context and performance of the mining and quarrying industry and sub-industries.

The mining (mining and quarrying (SIC 2)) industry are subdivided into the following sub-industries:

- Mining of coal and lignite (SIC 21)
- Mining of gold and uranium ore (SIC 23)
- Mining of metal ores (SIC 24)
- Other mining and quarrying (SIC 22 and 25–29)

Based on the outcome of the Leading/Lagging Analysis and Industry Targeting Classification System at a provincial level, the mining and quarrying industry and sub-industries are classified as follows:

- Industry: Mining and quarrying (high-priority retention target)
- Sub-industry: Mining of gold and uranium ore (high-priority retention target)

#### Table 26: Mining and quarrying industry and sub-industry: Industry Targeting Classification System Outcome

Industry and sub-industry	Limpopo Province	Capricorn District	Mopani District	Sekhukhune District	Vhembe District	Waterberg District
2 Mining and quarrying	High priority retention target	Emerging strength	Current strength	Prospects limited by external trends	Emerging strength	Prospects limited by external trends
21 Mining of coal and lignite	Prospects limited by weak base & declining competitiveness	Emerging strength	Prospects limited by weak base & external trends	Current strength	Emerging strength	Current strength
23 Mining of gold and uranium ore	High priority retention target	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited overall	Prospects limited overall
24 Mining of metal ores	Current strength	Emerging strength	Current strength	Prospects limited by external trends	Emerging strength	Prospects limited by external trends
25-29 Other mining and quarrying (incl 22)	Current strength	Emerging strength	Prospects limited by external trends	Prospects limited by external trends	Current strength	Prospects limited by external trends

- Sub-industry: Mining of metal ores (current strength)
- Sub-industry: Other mining and quarrying (including 22) (current strength)

At a provincial level, the current strengths are in the mining and quarrying subindustries mining of metal ores and other mining and quarrying (including 22). The Sekhukhune and Waterberg districts show current strength in the subindustry mining of coal and lignite. The Capricorn and Vhembe district show the most promising development potential, with emerging strengths in the overall mining and quarrying industry and in the sub-industries mining of coal and lignite, mining of metal ores and other mining and quarrying.

		GVA	(R 'millions, c	urrent prices 2	.021)		GVA AAGR 2016 to 2021 (constant prices)						
A	Mining and	Mining and		Sub-industry	contribution:				Sub-ind	ustry:			
Area	quarrying industry total GVA	quarrying industry contribution to total GVA	Mining of coal and lignite	Mining of gold and uranium ore	Mining of metal ores	Other mining and quarrying	Mining and quarrying industry total	Mining of coal and lignite	Mining of gold and uranium ore	Mining of metal ores	Other mining and quarrying		
Limpopo Province	130,572	31.0%	1.7%	1.4%	93.6%	3.4%	2.0%	1.1%	0.1%	1.8%	5.4%		
Capricorn District	16,745	12.6%	0.6%	1.3%	93.8%	4.2%	6.6%	1.4%	-4.5%	6.8%	8.9%		
Blouberg	1,044	12.9%	4.9%	1.0%	87.2%	6.9%	2.0%	2.8%	-3.3%	0.9%	10.3%		
Lepelle-Nkumpi	2,437	23.3%	0.8%	1.7%	93.3%	4.2%	6.9%	0.0%	-1.3%	7.2%	8.4%		
Molemole	1,984	17.0%	0.7%	1.2%	94.2%	3.9%	6.6%	0.1%	-5.6%	7.0%	8.3%		
Polokwane	11,280	11.0%	0.2%	1.3%	94.5%	4.0%	7.0%	0.6%	-5.2%	7.3%	8.8%		
Mopani District	35,313	36.8%	0.9%	3.1%	93.0%	3.0%	2.2%	-2.9%	2.8%	2.3%	3.3%		
Ba-Phalaborwa	18,990	81.3%	0.8%	2.4%	93.6%	3.3%	0.8%	-6.0%	4.7%	0.7%	1.8%		
Greater Giyani	835	3.9%	4.5%	23.7%	65.4%	6.4%	14.2%	7.3%	13.8%	15.2%	16.1%		
Greater Letaba	1,724	15.5%	2.0%	2.7%	93.0%	2.3%	6.8%	1.0%	-4.8%	8.2%	1.9%		
Greater Tzaneen	6,646	20.9%	1.0%	2.9%	93.2%	2.9%	6.2%	0.1%	-5.6%	7.2%	8.5%		
Maruleng	7,118	84.5%	0.5%	2.8%	94.5%	2.2%	0.2%	-6.5%	4.0%	0.0%	1.2%		
Sekhukhune District	22,760	48.8%	2.0%	0.4%	94.5%	3.1%	7.3%	2.4%	-2.1%	7.8%	8.6%		
Elias Motsoaledi	2,117	15.8%	17.4%	1.4%	72.0%	9.3%	8.6%	2.7%	-1.6%	9.3%	10.3%		
Ephraim Mogale	777	15.9%	4.5%	1.4%	90.0%	4.1%	8.0%	1.2%	-4.6%	8.5%	9.6%		
Fetakgomo Tubatse	16,342	77.5%	0.2%	0.3%	97.3%	2.2%	6.0%	1.0%	-1.7%	5.7%	7.7%		
Makhuduthamaga	3,524	48.4%	0.4%	0.3%	96.1%	3.2%	7.2%	2.8%	0.0%	7.8%	9.0%		
Vhembe District	7,661	10.9%	2.1%	2.7%	80.1%	15.2%	0.5%	1.2%	-6.8%	0.2%	4.6%		
Collins Chabane	1,467	8.5%	2.8%	2.2%	85.0%	10.0%	5.4%	2.6%	-4.0%	5.4%	13.8%		
Makhado	2,145	8.9%	0.8%	2.2%	85.2%	11.8%	6.8%	0.6%	-5.2%	7.8%	9.0%		
Musina	2,176	28.3%	0.9%	3.8%	68.4%	26.9%	-1.1%	-7.7%	-8.4%	-1.1%	0.8%		
Thulamela	1,873	8.8%	4.5%	2.3%	83.8%	9.4%	3.3%	-3.5%	-9.1%	3.4%	4.5%		
Waterberg District	48,093	63.5%	2.4%	0.3%	95.6%	1.7%	0.2%	2.1%	-0.2%	0.1%	2.0%		

### Table 27: Mining and quarrying industry and sub-industry economic context and performance, 2016 to 2021

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

		GVA	(R 'millions, c	urrent prices 2	2021)		GVA AAGR 2016 to 2021 (constant prices)						
Aree	Mining and	Mining and		Sub-industry	contribution:		Mining and		Sub-inc	lustry:			
	quarrying industry total GVA	industry contribution to total GVA	Mining of coal and lignite	Mining of gold and uranium ore	Mining of metal ores	Other mining and quarrying	quarrying industry total	Mining of coal and lignite	Mining of gold and uranium ore	Mining of metal ores	Other mining and quarrying		
Bela-Bela	2,350	43.6%	0.1%	0.2%	98.5%	1.1%	4.6%	-2.2%	-7.9%	4.6%	6.0%		
Lephalale	12,858	77.5%	7.6%	0.1%	91.3%	1.1%	3.0%	2.8%	-4.5%	3.1%	4.2%		
Modimolle-Mookgopong	2,063	23.7%	0.7%	0.3%	97.6%	1.5%	6.4%	-0.3%	-6.1%	6.5%	8.0%		
Mogalakwena	5,193	28.6%	2.2%	1.5%	92.2%	4.1%	7.1%	0.2%	6.4%	7.4%	8.6%		
Thabazimbi	25,630	95.3%	0.1%	0.2%	98.1%	1.5%	-3.2%	-6.9%	-4.2%	-3.2%	-2.0%		

At a district level, the overall mining and quarrying industry had the highest contribution to the total GVA in the Sekhukhune and Waterberg districts.

Table 28 indicates mining and quarrying industry and sub-industry employment and comparative advantage.

Table 28:	Mining and quarrying industry	and sub-industry	employment and	comparative advantage.	2016 to 2021
	mining and quarrying mousely	and sub-moustry	employment and	comparative advantage	20101020

	Minin	g and quarrying indust	ry	Location Quotient (LQ) / Comparative Avantage 2021							
A		Contribution to	Employment	Mining and		Sub-ii	ndustry:				
Area	Total Employed 2021	total employment 2021	to 2021	quarrying industry total	Mining of coal and lignite	Mining of gold and uranium ore	Mining of metal ores	Other mining and quarrying			
Limpopo Province	82,798	7.2%	2.5%	4.0	0.7	0.8	5.8	2.7			
Capricorn District	7,153	2.2%	5.4%	0.4	0.1	0.4	0.4	0.5			
Blouberg	346	1.9%	-3.6%	0.4	1.1	0.3	0.4	0.8			
Lepelle-Nkumpi	762	2.0%	4.8%	0.8	0.3	1.0	0.8	0.9			
Molemole	1,482	4.3%	4.6%	0.5	0.2	0.5	0.5	0.6			
Polokwane	4,564	1.9%	6.7%	0.3	0.0	0.3	0.4	0.4			
Mopani District	24,906	10.8%	4.4%	1.2	0.7	2.7	1.2	1.1			
Ba-Phalaborwa	7,972	21.5%	1.8%	3.4	1.6	5.7	3.4	3.3			
Greater Giyani	1,728	3.4%	7.6%	0.2	0.3	2.2	0.1	0.2			

Part C: Socio-Economic Analysis

	Mining	g and quarrying indust	ry	Location Quotient (LQ) / Comparative Avantage 2021							
Aree		Contribution to	Employment	Mining and		Sub-ii	ndustry:				
Area	Total Employed 2021	total employment 2021	to 2021	quarrying industry total	Mining of coal and lignite	Mining of gold and uranium ore	Mining of metal ores	Other mining and quarrying			
Greater Letaba	1,742	4.1%	5.9%	0.5	0.6	1.0	0.5	0.3			
Greater Tzaneen	12,565	14.9%	5.8%	0.7	0.4	1.4	0.7	0.5			
Maruleng	899	5.7%	2.3%	3.6	1.0	7.5	3.6	2.4			
Sekhukhune District	19,081	16.3%	-0.3%	0.4	0.4	0.7	0.3	1.4			
Elias Motsoaledi	871	2.1%	-3.1%	0.3	0.4	0.4	0.2	0.7			
Ephraim Mogale	380	2.1%	-1.4%	0.3	0.1	0.4	0.3	0.9			
Fetakgomo Tubatse	16,480	39.5%	-0.2%	1.1	0.4	2.4	0.6	6.7			
Makhuduthamaga	1,350	9.0%	1.9%	0.3	0.7	0.5	0.2	0.7			
Vhembe District	3,273	1.2%	2.3%	1.7	2.1	0.5	1.7	1.6			
Collins Chabane	619	1.0%	3.7%	0.6	5.0	0.5	0.4	1.3			
Makhado	937	2.5%	1.8%	0.5	1.3	0.5	0.5	0.6			
Musina	910	0.9%	4.8%	3.1	0.4	0.6	3.4	2.1			
Thulamela	807	1.1%	-0.4%	1.7	0.4	0.3	1.8	1.6			
Waterberg District	28,386	13.9%	2.2%	2.3	3.4	0.6	2.4	1.2			
Bela-Bela	603	4.4%	4.9%	1.5	0.1	0.3	1.6	0.5			
Lephalale	1,838	4.3%	-5.7%	3.2	14.0	0.3	3.1	1.0			
Modimolle-Mookgopong	593	1.6%	4.1%	0.7	0.3	0.2	0.8	0.3			
Mogalakwena	7,370	10.0%	5.2%	1.0	1.2	1.0	0.9	1.1			
Thabazimbi	17,982	47.4%	2.0%	4.3	0.3	0.8	4.7	2.1			

At a district level, the mining and quarrying industry shows the highest contribution to total employment in the Sekhukhune district at 16.3%.

The highest sub-industry comparative advantage for the three districts that show significant comparative advantage was the following:

Mopani:

- Sub-industry: mining of gold and uranium ore (location quotient = 2.7)

#### • Vhembe:

- Sub-industry: mining of coal and lignite (location quotient = 2.1)
- Sub-industry: mining of metal ores (location quotient = 1.7)
- Sub-industry: other mining and quarrying (location quotient = 1.6)
- Waterberg:
  - Sub-industry: mining of coal and lignite (location quotient = 3.4)
  - Sub-industry: mining of metal ores (location quotient = 2.4)

Figure 29 illustrates the municipalities with a high dependence (dominance) on mining activity. The mining dependency is highest for the municipalities of Thabazimbi, Fetakgomo Tubatse, Ba-Phalaborwa and Lephalale.



Figure 29: Municipalities with high dependence(dominance) on mining activity

According to the Department of Mineral Resources and Energy's (DMRE) dataset of operating mines and quarries, the Limpopo Province has 147 operating mines. The spatial distribution of the mines is illustrated in Figure 30.

It is evident that large-scale mining production is dominant in certain areas of the province. A clustering of mining activity emerges in the following areas:

- Platinum mining clusters are found at Mokopane; Northam/Amandelbult; and Burgersfort/ Steelpoort
- Coal and petrochemical cluster at Lephalale and Steenbokpan
- Musina Makhado mining cluster (coal and diamonds) north of the Soutpansberg
- Phalaborwa Copper mining cluster

Notable mining-related assets as reported in the LDP 2020-2025 include:

- The largest open-pit platinum mine in South Africa (Mogalakwena Mine) north of Mokopane
- The largest copper mine in South Africa (Palaborwa Mining Company) at Ba-Phalaborwa
- The largest diamond mine in South Africa (Venetia Mine) at Musina
- The largest vermiculite mine in the world at Ba-Phalaborwa
- The largest vanadium resources in the world
- 90% of South Africa's red-granite resources
- 41% of South Africa's platinum group metals (PGMs) resources: Parts of the western limb of the platinum mining belt extend from Rustenburg/Marikana area into the Thabazimbi region at Northam/Amandelbult, while the eastern limb of the bushveld indigenous complex is found from north of Mokopane along the Dilokong Corridor to Burgersfort and Steelpoort areas. This mining belt is a major source of chrome, vanadium and platinum.
- 50% of South Africa's untapped coal resources are found within the Limpopo Province with especially large deposits at the Tuli Coalfields (at the Pontdrif border post), in the Lephalale/ Steenbokpan region, along the northern flank of the Soutpansberg mountains, along the southern bank of the Limpopo River (west of Musina) and on the Springbok Flats. The coalfields are said to be enough to carry South Africa for the next 50 years and beyond. The coal mining operations at Lephalale/Steenbokpan currently supplies the Medupi and Matimba power stations.
- Substantial deposits of antimony (a lead-antimony alloy is used in batteries). Other uses of antimony alloys include type metal (in printing presses), bullets and cable sheathing. Antimony compounds are used to make flame-retardant materials, paints, enamels, glass and pottery.)

## 3.4.2.1 Challenges

Constraints affecting the exploiting of especially the coal and platinum reserves are the lack of rail infrastructure to transport export-grade coal and chrome to the Richards Bay harbour.

Further, the roads are under immense pressure to carry the mine carriage to smelters in Rustenburg, Mashishing and Middelburg, and export destinations via the N4 and N3 are namely the N11, R33, R510, R555, D212, R577 and R37.

The continued expansion of settlements on land with mineral rights is threatening the potential sterilisation of the mining potential and impact not only stakeholder relations, but community safety.

There are a large number of abandoned mines without the required mine closure processes completed in the central and northern parts of the province. Coupled with it, is the rising occurrence of illegal mining activity, especially in the Sekhukhune district.

As with the other sectors, the availability of bulk water and electricity is impacting operations. Some private initiatives and partnerships have been established to secure bulk water, especially to the Sekhukhune and Mogalakwena mining areas. It was further observed that individual alternative energy sources are sourced to sustain operations.

The availability of housing opportunities supporting home ownership as prescribed by the DMRE Housing and Living Conditions Standards, 2019, is a serious constraint to mine houses. There are not sufficient housing opportunities and options available in Northam, Mogalakwena, Lebowakgomo/Jane Furse/Atok and Steelpoort to attract specialised and skilled labour required by the mining operations. This result in labour to seek housing in surrounding areas which leads to daily commuting and increased traffic volumes.

Overall, mining operations prioritise employment of local labour. For this purpose, the educational and skills development programmes in the province need to align with the needs and development strategies of this sector to ensure the availability of a skilled labour force to support the specific requirements of the sector.

The required Social and Labour Plans (SLPs), as well as Housing and Living Conditions Plans, need to align with municipal IDPs. The new generation SLPs require an integrated development focus away from the small individual projects that previous SLPs tend to implement. The focus is also stronger on integration and support to infrastructure investments. The trend is also that large mining companies develop the required SLPs to comply with the Standards, but the smaller companies tend not to have these plans in place. Considering the significant increase in new smaller mines in the province, their combined impact is not defined and known to adequately plan for.

## 3.4.2.2 Impact of COVID

The restrictions on the movement of people and goods have affected the availability of key inputs like machinery and spare parts, leading to delays in production and increased costs. Moreover, the reduced demand for commodities due to the pandemic has resulted in a decline in prices, negatively impacting the revenue of mining companies.

In addition, the pandemic has also had an impact on the health and safety of mining workers. Companies have had to implement strict protocols to minimize the risk of infection, such as social distancing, regular testing, and the provision of personal protective equipment (PPE). These measures have led to increased costs for companies and disruptions in the productivity of mining operations.

The pandemic has also highlighted the need for the mining industry to adopt digital technologies to improve efficiency and minimize disruptions. Remote work and the use of automation technologies can help to reduce the risk of infection and maintain productivity during times of crisis.

### 3.4.2.3 Development opportunities

As per the LDP report, there are numerous opportunities that the mining sector can capitalize on. For instance, the promotion of mineral beneficiation is crucial and continues to be an essential focus area for the Musina-Makhado Special Economic Zones (SEZs) and Tubatse Platinum Industrial Hub. By embracing Fourth Industrial Revolution (4IR) technologies, the mining industry can improve its viability, increase operational efficiency, lower operational costs, improve competitiveness, and enhance occupational health and safety (OHS) and skills.

Furthermore, the exploration and mining of rare earth minerals can provide another opportunity for the sector. After mining, these minerals can be processed through beneficiation and manufacturing to create products that support the 4IR, such as electric vehicles and cell phones. These products have high demand globally, which means that investing in the mining and manufacturing of rare earth minerals can potentially yield high returns.

As the mining of metal ores is the greatest sub-sector which contributes to the GVA, there is an opportunity to boost the sub-sector. This can be achieved through the following means:

- Investing in infrastructure: Developing transport infrastructure such as roads, rail, and ports can significantly reduce transportation costs and improve access to markets, thereby making mining operations more viable and profitable and alleviating these challenges.
- Promoting exploration and research: Encouraging and supporting exploration and research activities can help identify new deposits of metal ores and improve the accuracy of resource estimates. This can lead to the discovery of new and more extensive mineral deposits, which can increase the longevity and profitability of mining operations.
- Promoting local beneficiation and manufacturing: Encouraging the local beneficiation and manufacturing of metal ores can create new value-added industries and jobs, thereby boosting local economies. This approach can also help reduce the country's dependence on foreign markets for processed metals.
- Attracting investment: Providing incentives such as tax breaks, subsidies, and streamlined regulatory processes can attract local and foreign investment in the mining sector. This can lead to the creation of new mining operations, as well as the expansion and modernization of existing ones.
- Improving skills development: Investing in skills development and training programs for the mining workforce can help build a highly skilled and specialized labour force. This can improve the efficiency and safety of mining operations and increase productivity.
- Fostering partnerships and collaboration: Encouraging partnerships and collaboration between mining companies, local communities, and government can help address social and environmental concerns associated with mining activities. This can also promote the sustainable development of the mining industry in the region.



Figure 30: Mining activity and clusters

## 3.4.3 Industrial and manufacturing

During the State of the Province Address, 2023, the Premier emphasized that industrialisation of the provincial economy, through implementation of megaprojects in manufacturing and the agriculture and tourism sectors, continues unabated. The department is implementing high impact catalytic projects focusing on the Broadband Network Infrastructure Initiative, the Science & Technology Park, Digital Hubs and our two Special Economic Zones, namely, Musina-Makhado SEZ & proposed Fetakgomo-Tubatse SEZ. LEDET will drive implementation of the industrialisation programme in partnership with other sector departments in the Economic Cluster.

The manufacturing sector is considered the backbone of development in general and economic development mainly because of the following:

- Manufacturing industries help modernise agriculture and reduce the heavy dependence of people on agricultural income by providing them with jobs in secondary and tertiary sectors.
- Industrial development is a precondition for the alleviation of unemployment and poverty as the industry can employ large numbers of low- to medium-skilled workers.
- The industry can also aid in bringing down regional disparities by establishing industries and linkages to more rural areas.
- Its processes can easily be standardised and scaled to complement economic clustering.
- The sector benefits from technological change and productivity growth, thus exhibiting positive learning and process development opportunities.
- It is tradable, allowing developing countries to tap into global value chains as well as new markets for buying and selling goods.

Several factors determine the location of manufacturing industries, key among them being what is produced in the area. These other factors include:

 Physical factors: Heavy industry, for example, needs to be near raw materials such as coal, iron ore and electricity, and also needs mass transport such as railways and water transport.

- **Economic factors:** Certain industries need to be near their markets, e.g. service industries.
- Social factors: Each manufacturing activity requires different amounts of labour, both in terms of quantity and skill levels.
- Political factors: The government may decide where to establish industries (as is the case of the Industrial Parks Revitalisation Programme (IPRP) and other special economic zones (SEZs)).

Industry contribution to GVA (Table 11) and employment (Table 15) at a local level discussed in previous sections indicates that the manufacturing industry contributes 2.5% to its economy, which is below the national average of 13.1%, and only 5.6% to total employment in Limpopo, which is below the national average of 9.7%.

Based on the outcome of the leading/lagging analysis and industry targeting classification system at a provincial level, no manufacturing industry and subindustries were classified as current or emerging strength industries or highpriority retention target areas, as shown in Table 21. As an industry in the province, manufacturing shows mostly marginal prospects with limited potential for development.

The main current and emerging strength (rising) and high-priority retention areas (promising) are in the Capricorn and Vhembe districts for almost all nine of the manufacturing sub-industries.

Manufacturing features prominently in the Capricorn and Vhembe districts. Nine of the ten manufacturing sub-industries in Capricorn are high-priority retention areas, with only current strength in sub-industry 30 Food, beverages and tobacco products. Similarly, in Vhembe, eight of the ten manufacturing sub-industries are high-priority retention areas, with only current strength in sub-industry 30 Food, beverages and tobacco products and sub-industry 34 Other non-metallic mineral products showing limited development prospects with subsequent low competitiveness due to lack of growth and development.

#### Table 29: Manufacturing industry and sub-industry: Industry targeting classification system outcome

Industry and sub-industry	Limpopo Province	Capricorn District	Mopani District	Sekhukhune District	Vhembe District	Waterberg District
3 Manufacturing	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited by external trends & declining competitiveness
30 Food, beverages and tobacco products	Prospects limited by weak base & external trends	Current strength	Prospects limited by weak base & external trends	Prospects limited by external trends	Current strength	Prospects limited by weak base & external trends
31 Textiles, clothing and leather goods	Prospects limited overall	High priority retention target	Prospects limited by weak base & declining competitiveness	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness
32 Wood and wood products	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness	Prospects limited overall	High priority retention target	Prospects limited overall
33 Fuel, petroleum, chemical and rubber products	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited by external trends & declining competitiveness
34 Other non-metallic mineral products	Prospects limited overall	High priority retention target	Prospects limited overall	Prospects limited by external trends & declining competitiveness	Prospects limited by weak base & declining competitiveness	Prospects limited by external trends & declining competitiveness
35 Metal products, machinery and household appliances	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited by external trends & declining competitiveness
36 Electrical machinery and apparatus	Prospects limited overall	High pr iority retention target	Prospects limited overall	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness
37 Electronic, sound/vision, medical & other appliances	Prospects limited overall	High priority retention target	Prospects limited by weak base & declining competitiveness	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited overall
38 Transport equipment	Prospects limited by weak base & external trends	High priority retention target	Prospects limited overall	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness

Industry and sub-industry	Limpopo Province	Capricorn District	Mopani District	Sekhukhune District	Vhembe District	Waterberg District
39 Furniture and other items NEC and recycling	Prospects limited overall	High priority retention target	Prospects limited by external trends & declining competitiveness	Prospects limited by external trends & declining competitiveness	High priority retention target	Prospects limited overall

At a provincial level, the manufacturing industry and sub-industries show limited development prospects. At a district level, the Capricorn and Vhembe districts are characterised by high-priority retention areas, both showing current strength in manufacturing sub-industry 30 Food, beverages and tobacco products. The manufacturing industry and its sub-industries show very limited development prospects in the Mopani, Sekhukhune and Waterberg districts.

Table 30 indicates industry and sub-industry economic context.

Table 30:	Manufacturing	industry and	sub-industry	economic context,	2021
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	GVA: Ma	GVA: Manufacturing industry			Manufacturing sub-industries contribution to manufacturing industry's total GVA 2021 (current prices)								
	Manufact uring industry total GVA (current prices)	Industry contributi on to total GVA (current prices)	Industry GVA AAGR 2016 to 2021 (constant prices)	30 Food, beverages and tobacco products	31 Textiles, clothing and leather goods	32 Wood and wood products	33 Fuel, petroleum, chemical and rubber products	34 Other non- metallic mineral products	35 Metal products, machinery and household appliances	36 Electrical machinery and apparatus	37 Electronic, sound/vision, medical & other appliances	38 Transport equipment	39 Furniture and other items NEC and recycling
Limpopo Province	10,373	2.5%	-1.6%	37.9%	2.7%	9.5%	13.4%	3.2%	15.2%	2.0%	0.6%	3.5%	12.0%
Capricorn District	4,543	3.4%	-0.8%	39.9%	2.7%	8.9%	14.8%	3.7%	11.8%	2.2%	0.7%	4.1%	11.1%
Blouberg	190	2.3%	0.5%	37.2%	2.3%	8.3%	13.1%	4.0%	12.9%	2.3%	0.6%	4.4%	14.9%
Lepelle-Nkumpi	255	2.4%	-1.8%	41.4%	3.0%	10.0%	14.0%	4.8%	13.4%	2.3%	0.2%	2.4%	8.5%
Molemole	392	3.4%	-1.3%	38.8%	2.9%	9.4%	13.5%	3.5%	12.0%	2.2%	0.9%	4.9%	12.0%
Polokwane	3,707	3.6%	-0.8%	40.0%	2.7%	8.9%	15.0%	3.7%	11.7%	2.2%	0.8%	4.1%	11.0%
Mopani District	1,697	1.8%	-1.7%	37.7%	2.1%	13.0%	9.6%	2.8%	16.5%	1.4%	0.3%	2.3%	14.1%
Ba-Phalaborwa	91	0.4%	-9.9%	26.0%	1.4%	8.8%	14.7%	3.5%	31.2%	2.2%	0.2%	3.6%	8.4%

	GVA: Ma	anufacturing	industry	Manufacturing sub-industries contribution to manufacturing industry's total GVA 2021 (current prices)									)
	Manufact uring industry total GVA (current prices)	Industry contributi on to total GVA (current prices)	Industry GVA AAGR 2016 to 2021 (constant prices)	30 Food, beverages and tobacco products	31 Textiles, clothing and leather goods	32 Wood and wood products	33 Fuel, petroleum, chemical and rubber products	34 Other non- metallic mineral products	35 Metal products, machinery and household appliances	36 Electrical machinery and apparatus	37 Electronic, sound/vision, medical & other appliances	38 Transport equipment	39 Furniture and other items NEC and recycling
Greater Giyani	223	1.1%	7.2%	43.8%	4.9%	11.0%	9.1%	2.4%	16.2%	1.6%	0.3%	1.1%	9.6%
Greater Letaba	296	2.7%	-0.9%	36.2%	1.8%	15.1%	12.7%	2.8%	16.1%	1.4%	0.3%	2.4%	11.3%
Greater Tzaneen	1,058	3.3%	-2.1%	38.1%	1.7%	13.3%	8.4%	2.9%	15.2%	1.4%	0.4%	2.3%	16.4%
Maruleng	28	0.3%	-10.8%	27.0%	1.6%	10.9%	13.8%	3.9%	23.8%	2.3%	0.2%	3.8%	12.7%
Sekhukhune District	1,861	2.6%	-3.2%	39.1%	3.8%	9.9%	10.4%	2.0%	14.1%	2.5%	0.5%	3.9%	13.8%
Elias Motsoaledi	472	2.7%	-0.3%	39.7%	4.2%	9.9%	9.4%	1.8%	13.8%	2.7%	0.6%	4.2%	13.7%
Ephraim Mogale	752	3.1%	-1.1%	38.5%	2.9%	10.8%	12.0%	2.3%	14.3%	1.6%	0.2%	3.6%	13.9%
Fetakgomo Tubatse	126	1.6%	-11.6%	34.1%	2.1%	7.8%	16.3%	2.7%	15.2%	3.0%	0.4%	2.3%	16.2%
Makhuduthamaga	510	2.4%	-6.3%	40.7%	5.2%	9.0%	7.7%	1.5%	13.8%	3.6%	0.8%	4.6%	13.1%
Vhembe District	1,008	2.2%	0.1%	30.3%	1.9%	6.7%	11.3%	2.8%	30.0%	1.1%	0.7%	2.3%	12.8%
Collins Chabane	615	4.6%	0.5%	32.0%	1.5%	5.4%	11.0%	3.1%	30.8%	1.1%	0.4%	2.1%	12.5%
Makhado	157	3.2%	-0.4%	34.8%	2.2%	8.3%	14.5%	2.3%	19.5%	1.4%	0.3%	3.4%	13.4%
Musina	160	0.8%	-2.4%	21.1%	2.3%	10.5%	10.6%	2.6%	35.1%	1.0%	2.5%	1.7%	12.8%
Thulamela	75	1.0%	1.2%	26.2%	3.5%	5.7%	9.0%	2.4%	35.1%	1.0%	0.1%	2.4%	14.6%
Waterberg District	1,265	1.7%	-4.7%	35.3%	2.7%	8.3%	19.8%	3.5%	15.3%	2.1%	0.2%	3.5%	9.4%
Bela-Bela	132	2.4%	-4.5%	45.3%	2.4%	8.6%	17.8%	2.0%	13.0%	1.2%	0.1%	3.6%	6.0%
Lephalale	147	0.9%	-7.4%	35.1%	2.1%	6.8%	16.3%	2.1%	14.2%	6.0%	0.1%	3.0%	14.3%
Modimolle-Mookgopong	294	3.4%	-3.1%	39.9%	5.6%	10.5%	20.6%	3.5%	6.3%	1.1%	0.2%	3.7%	8.6%
Mogalakwena	595	3.3%	-2.5%	34.8%	1.9%	7.2%	21.8%	2.7%	16.1%	1.9%	0.1%	3.5%	10.0%
Thabazimbi	97	0.4%	-14.4%	10.3%	1.1%	9.9%	13.1%	12.9%	42.1%	1.2%	0.5%	3.5%	5.4%

At a provincial level, the manufacturing industry contributes 2.5% to the total GVA. When the respective districts are compared, manufacturing shows the highest contribution to the total GVA in the Capricorn and Sekhukhune districts. In terms of average annual growth rate for the period 2016 to 2021, only the Vhembe district showed positive average annual growth, although it is limited at 0.1%.

In terms of sub-industries, at a provincial level, sub-industry 30 Food, beverages and tobacco products shows the highest contribution to the total GVA at 37.9%, followed by sub-industries 35 Metal products, machinery and household appliances (15.2%), 33 Fuel, petroleum, chemical and rubber products (13.4%) and 39 Furniture and other items NEC and recycling (12.0%). At a district level, sub-industry contribution to the total GVA follows

a similar trend for almost all districts, with sub-industry 30 Food, beverages and tobacco products showing the highest contribution to the total GVA in all districts, followed by sub-industries 35 Metal products, machinery and household appliances, 33 Fuel, petroleum, chemical and rubber products and 34 Other non-metallic mineral products. The only exception is sub-industry 35 Metal products, machinery and household appliances, which shows the same contribution to the total GVA as sub-industry 30 Food, beverages and tobacco products, at 30.0%.

Table 31 indicates manufacturing industry and sub-industry employment and comparative advantage.

#### Table 31: Manufacturing industry and sub-industry employment and comparative advantage

	Employ	Employment: Manufacturing industry			Manufacturing sub-industries Location Quotient (LQ) / Comparative Avantage 2021									
	Total 2021	Contribu- tion to total 2021	AAGR 2016 to 2021	30 Food, beverages and tobacco products	31 Textiles, clothing and leather goods	32 Wood and wood products	33 Fuel, petroleum, chemical and rubber	34 Other non- metallic mineral products	35 Metal products, machinery and household	36 Electrical machinery and apparatus	37 Electronic, sound/vision, medical & other	38 Transport equipment	39 Furniture and other items NEC and recvcling	
Limpopo Province	64,141	5.6%	-2.0%	0.4	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.3	
Capricorn District	21,952	6.6%	-1.0%	1.3	1.3	1.2	1.4	1.5	1.0	1.4	1.7	1.5	1.2	
Blouberg	692	3.8%	-1.3%	0.9	0.7	0.8	0.8	1.1	0.7	1.0	0.9	1.1	1.1	
Lepelle-Nkumpi	1,789	4.7%	-2.0%	1.0	1.1	1.0	1.0	1.4	0.8	1.1	0.4	0.7	0.7	
Molemole	2,738	7.9%	-0.5%	1.3	1.3	1.3	1.3	1.4	1.0	1.4	2.1	1.8	1.3	
Polokwane	16,733	7.0%	-0.9%	1.4	1.3	1.3	1.5	1.6	1.0	1.5	1.9	1.6	1.2	
Mopani District	12,370	5.3%	-1.9%	0.7	0.6	1.0	0.5	0.7	0.8	0.5	0.4	0.5	0.9	
Ba-Phalaborwa	2,025	5.5%	-4.4%	0.1	0.1	0.2	0.2	0.2	0.4	0.2	0.1	0.2	0.1	
Greater Giyani	2,413	4.7%	3.1%	0.5	0.7	0.5	0.3	0.3	0.4	0.3	0.2	0.1	0.3	
Greater Letaba	2,424	5.7%	-2.4%	1.0	0.7	1.6	0.9	0.9	1.1	0.7	0.6	0.7	0.9	

	Employ	Employment: Manufacturing industry			Manufacturing sub-industries Location Quotient (LQ) / Comparative Avantage 2021									
	Total 2021	Contribu- tion to total 2021	AAGR 2016 to 2021	30 Food, beverages and tobacco products	31 Textiles, clothing and leather goods	32 Wood and wood products	33 Fuel, petroleum, chemical and rubber	34 Other non- metallic mineral products	35 Metal products, machinery and household	36 Electrical machinery and apparatus	37 Electronic, sound/vision, medical & other	38 Transport equipment	39 Furniture and other items NEC and recvclinq	
Greater Tzaneen	4,844	5.7%	-1.8%	1.3	0.8	1.8	0.8	1.2	1.3	0.9	0.8	0.8	1.7	
Maruleng	663	4.2%	-7.7%	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.1	0.2	0.2	
Sekhukhune District	6,252	5.3%	-4.6%	0.8	0.6	0.7	0.8	0.9	1.9	0.5	1.2	0.6	1.0	
Elias Motsoaledi	2,133	5.0%	-2.7%	1.4	0.9	1.0	1.4	1.7	3.5	1.0	1.3	1.0	1.8	
Ephraim Mogale	840	4.7%	-2.1%	1.1	1.0	1.1	1.3	0.9	1.5	0.8	0.6	1.2	1.3	
Fetakgomo Tubatse	2,762	6.6%	-6.6%	0.2	0.3	0.4	0.3	0.3	0.9	0.2	1.8	0.2	0.4	
Makhuduthamaga	516	3.5%	-4.5%	0.3	0.6	0.3	0.3	0.3	1.0	0.2	0.1	0.3	0.5	
Vhembe District	11,591	4.3%	-1.5%	1.0	1.3	1.0	0.8	0.6	0.9	1.2	0.8	1.1	1.1	
Collins Chabane	2,706	4.3%	-1.4%	1.1	1.5	1.1	0.7	0.6	0.9	1.3	1.0	1.2	1.1	
Makhado	1,238	3.2%	-1.6%	1.2	1.2	1.3	1.0	0.8	1.1	0.9	0.4	1.2	1.3	
Musina	4,966	5.1%	-2.1%	0.5	0.5	0.5	0.7	0.5	0.6	0.9	0.5	0.4	0.8	
Thulamela	2,681	3.8%	-0.5%	0.9	1.7	0.8	0.5	0.4	0.8	1.5	1.3	1.1	1.0	
Waterberg District	11,975	5.9%	-2.6%	0.7	0.8	0.7	1.2	0.9	0.8	0.8	0.2	0.8	0.6	
Bela-Bela	618	4.5%	-4.6%	1.2	0.9	0.9	1.4	0.7	0.9	0.6	0.2	1.1	0.5	
Lephalale	2,303	5.4%	-2.9%	0.4	0.3	0.3	0.5	0.3	0.4	1.3	0.1	0.4	0.5	
Modimolle-Mookgopong	2,973	8.2%	-1.3%	1.4	2.6	1.4	2.0	1.4	0.5	0.7	0.4	1.4	0.9	
Mogalakwena	4,943	6.7%	-1.3%	1.2	0.9	1.0	2.1	1.1	1.4	1.2	0.2	1.3	1.1	
Thabazimbi	1,138	3.0%	-8.6%	0.1	0.1	0.2	0.2	0.9	0.6	0.1	0.2	0.2	0.1	
At a provincial level, the manufacturing industry contributed 5.6% to total employment. At a district level, manufacturing showed a higher contribution to total employment only in the Capricorn and Waterberg districts at 6.6% and 5.9% respectively.

The only municipalities in the province where manufacturing makes a noteworthy contribution towards employment (5%+) are the following:

- Molemole (7.9%)
- Polokwane (7.0%)
- Ba-Phalaborwa (5.5%)
- Greater Letaba (5.7%)
- Greater Tzaneen (5.7%)
- Elias Motsoaledi (5.0%)
- Fetakgomo Tubatse (6.6%)
- Musina (5.1%)
- Lephalale (5.4%)
- Modimolle Mookgopong (8.2%)
- Mogalakwena (6.7%)

At a provincial level, manufacturing sub-industries showed relatively low to medium comparative advantage, all with location quotients below 1.24. The implication is that manufacturing sub-industries are either not meeting the needs of the province, reflecting on a subsequent need to import manufactured goods and services, or meeting local needs to some extent, translating into possible imports and exports of industry good and services.

At a local municipal level, most manufacturing sub-industries show mostly a low to medium comparative advantage, with some exceptions that showed a high comparative advantage, with location quotients between 1.25 and 4.99, thereby indicating that the sub-industries are serving needs beyond local borders, through the export of goods and services in the relevant subindustries, to other areas. Municipalities with a high comparative advantage are located mostly in Molemole, Polokwane, Greater Tzaneen, Elias Motsoaledi, Ephraim Mogale to some extent, Modimolle-Mookgopong and Mogalakwena

# 3.4.3.1 Special economic zones (SEZs)

As part of the provincial industrialisation transformation, the province is implementing a mega industrialisation process. Two such projects are the Musina–Makhado SEZs and the Fetakgomo-Tubatse SEZ/ Industrial hub.

#### Musina-Makhado (MMSEZ)

The MMSEZ comprise of two sites located between Musina and Makhado in the Vhembe district. The MMSEZ is a flagship programme of the Limpopo Provincial Government. The purpose of the SEZ is to reduce the total cost of logistics, increase the efficiency of the logistics system, increase economic activity in Musina in particular and Limpopo in general, and improve supply chain interactions.

The MMSEZ and has been designated as a SEZ. A MMSEZ State owned company (SOC) has been established. Currently, two sites are under consideration for the SEZ:

#### Northern Site – Antonvilla/ Gateway to SADC:

The first site is in the north, south of the South Africa–Zimbabwe border near the Beitbridge border post. It forms part of the Trans-Limpopo Spatial Development Initiative (SDI). The site's area is 3,500 ha. It falls in the Musina local municipality.

The northern site targets the following areas:

- Agro-processing, to target agricultural production and processing in citrus, avocados, bananas, litchis, mangoes, macadamia nuts, tomatoes, potatoes and onions.
- Logistics (dry port), to target raw materials and finished products transported via the regional north–south transport corridor. The corridor is a strategic link between South Africa and neighbouring countries.
- Light industrial/general manufacturing.

The logistics hub will comprise a distribution centre, warehouses, a container yard and an administration hub with an adjoining vehicle distribution centre and agricultural hub for food processing and fresh produce.

Part C: Socio-Economic Analysis

The planning of the northern site belongs to the national government and is currently still in the planning process.

 Southern site – Steel cluster/mineral beneficiation and metallurgical cluster:

The second site is located along the N1, south of Messina, on the road to Louis Trichardt, with an area of 8,000 ha. The site borders the Musina and Makhado municipalities and is aimed at heavy industries focused on the beneficiation of rich mineral resources in the region, including an energy and metallurgical complex. The industrial area will comprise a power plant, coal methanol plant, waste gasification plant, CTL plant, coke plant, water treatment plant, synthetic bitumen area, and cotton weaving industry. The land of the southern site is community-owned.

The total value add is expected to be around R150 billion, R250 million of which is earmarked for the construction of an electricity substation, which is in the process of being approved by the Presidency Project Preparation and Development Funds. Job creation is estimated at 21,700 jobs.

The southern site is still in environmental impact assessment (EIA) stage.

#### Fetakgomo-Tubatse (FTSEZ)

The proposed FTSEZ has been identified for development as a central industrial ecosystem and hub. The areas proposed to be developed as a SEZ are located in the Fetakgomo Tubatse Local Municipality in the Sekhukhune district and are located on the Bushveld Igneous Complex (Eastern Limb), which is home to the Merensky Reef in Limpopo. The establishment of the FTSEZ is driven by the projected mining and beneficiation outlook of Platinum Group of Metals (PGMs) in South Africa. The SEZ is expected to impact positively on more than a million people in the province due to improved economic activities in the Dilokong Spatial Economic Initiative and improve economic progress in other districts and municipalities.

The planned SEZ is situated between two mining corridors, namely the Dilokong Platinum Corridor and the Steelpoort Stoffberg Chrome Corridor.

The proposed FTSEZ is planned on portions of the farm Spitskop 333KT, which measures 1,780 ha in extent, of which the planned SEZ will comprise an area size of 1,220 ha of the mentioned property.

The area is characterised by a high concentration of rich mineral resources and part of global leader of PGM and chrome resources, which has more than 40 mining operations, including vanadium, iron ore and selected battery minerals. It is expected that FTSEZ will contribute significantly to economic growth, industrialisation and mineral beneficiation. The location is south of Steelpoort, where there is an industrial park already.

The total value add is expected to be around R25 billion, of which R1.5 billion is earmarked for human settlement. This is currently in the process of being approved by the Presidency Project Preparation and Development Funds. Job creation is estimated at 8,000 jobs.

The FTSEZ is being developed through a partnership between the Department of Trade, Industry and Competition (DTIC), the Limpopo Provincial Government (LPG), the Sekhukhune District Municipality and the Fetakgomo Tubatse Local Municipality.

Phase 1a entails the expansion of the 36ha Mining Input Supply Park (MISP) and installation of bulk infrastructure. Phase 2a will include the expansion west of the R555 and clearing of 280ha. The anchor investments are light and medium manufacturing such as machinery and equipment manufacturing suppliers, green energy manufacturing, agribusiness and green vehicles components cluster. The anchor investments in Phase 2 are heavy manufacturing such as renewable energy companies, smelter and refinery of chrome products. The concurrent phase 3 involves the design and build of a logistics hub station for export markets.

A comprehensive SEZ master plan and business case is underway as well as the process for gazetting of the area as a SEZ.

#### 3.4.3.2 Industrial Parks Revitalisation Programme

South Africa's Department of Trade and Industry (the dti) launched an Industrial Parks Revitalisation Programme (IPRP) aimed at resuscitating and

reviving South Africa's old industrial parks and equipping them to drive job creation in the manufacturing sector and remove barriers related to market infrastructure for firms. These industrial parks have often fallen into a state of dysfunction due to neglect, rising crime and vacancies, hence the strong initial focus of the programme on installing and upgrading the security and basic infrastructure.

The IPRP is a structured programme to revitalise industrial parks in the old industrial areas across the country, particularly around former homelands, smaller (secondary) towns, townships, distressed mining towns, laboursending areas and rural areas. The programme has identified the first ten state-owned industrial parks to be revitalised through a focus on both physical infrastructure and other support requirements.

#### The revitalisation programme has four phases:

- **Phase 1:** Security infrastructure upgrade, fencing, street lighting, top structures and critical electricity requirements.
- Phase 2: Engineering designs and the construction of new roads and the repair of existing roads, bulk water supply and sewage treatment plants or industrial effluent control.

**Phase 3:** Upgrading electricity infrastructure and building new top structures in line with the expansion programme of the parks.

• Phase 4: Developing sustainable industrial clusters in the parks.

Phase 4 of the IPRP is centred on the dti's Cluster Development Programme (CDP), whose purpose is to facilitate and support industrial clusters. The CDP is focused on growing existing firms, as industry clusters are usually groups of similar and related firms in a defined geographical area that share common markets, technologies and worker skill needs and that are often linked by some buyer–seller relationships.

The industrial parks are managed and owned by the province's investment promotion agency, the Local Economic Development Agency (LEDA), which is an entity of the Limpopo Department of Economic Development, Environment and Tourism (LEDET). LEDA is the primary driver of the provincial government's drive to boost the economy through investment.

There are three prioritised parks in Limpopo:

- Nkowankowa Industrial Park
- Seshego Industrial Park
- Thohoyandou Industrial Park

#### Nkowankowa Industrial Park

Nkowankowa is located in Nkowankowa in the Mopani district and has an estimated value add of R40 million. Job creation is estimated at 3,737 jobs. Situated along the Phalaborwa Corridor, the Nkowankowa Industrial Park is a strategic location for regional and inter-continental trade. It is connected to Nelspruit, Tzaneen and the deep-water port of Maputo in Mozambique.

Phase 1 of the revitalisation was completed in 2019. It included the installation of a CCTV system, a perimeter fence and pedestrian and vehicular gates, the refurbishment of high mast lights, and the provision of waste skip structures.

#### **Seshego Industrial Park**

Seshego is located in the Seshego township in the Capricorn district and has an estimated value add of R35 million. Job creation is estimated at 1,262 jobs.

The park houses 72 factories, which include manufacturing, agro-processing, services and storage enterprises.

Approximately 1,550 jobs have been created through the Seshego Industrial Park in large industries, while small industries in the industrial park have created about 240 jobs.

Phase 1 of the revitalisation programme was focused on professionalising the industrial area, improving the physical security and eliminating the non-business-related activities that were taking place in the park.

Phase 2 of the Seshego revitalisation programme is focused on refurbishing the buildings and some of the physical infrastructure beyond security.

### **Thohoyandou Industrial Park**

Thohoyandou is located in Shayandima in the Vhembe district and has an estimated value add of R139.5 million. Job creation is estimated at 1,000 jobs.

# 3.4.3.3 Impact of COVID

The COVID-19 pandemic has had a significant impact on sub-sectors in the industrial and manufacturing sector as follows:

- Food, beverages, and tobacco products: The restrictions on movement and trade, as well as the closure of some businesses, have led to a decline in demand for food, beverages, and tobacco products. The closure of restaurants, hotels, and other hospitality businesses has significantly impacted the food industry. The tobacco industry has also been affected by the government's ban on the sale of cigarettes during the early stages of the pandemic.
- Metal products, machinery, and household appliances: The pandemic has led to a slowdown in manufacturing activities and a reduction in demand for metal products, machinery, and household appliances. This is partly due to supply chain disruptions caused by the closure of borders and factories, as well as a reduction in consumer demand.
- Fuel, petroleum, chemical, and rubber products: The lockdown measures implemented to contain the spread of the virus resulted in a significant decrease in fuel consumption, which negatively impacted the fuel and petroleum industry. The chemical and rubber products industry was also affected by the reduction in demand from other sectors, such as automotive and construction.
- Furniture and other Not Elsewhere Classified (NEC) and recycling: The closure of businesses and the reduction in consumer demand have negatively impacted the furniture industry. Recycling activities have also been affected due to the closure of recycling plants and restrictions on the movement of waste.

### 3.4.3.4 Development opportunities

The path towards industrialisation in Limpopo involves multiple initiatives, including mega-industrialisation projects that have been prioritised by the government to enhance economic value and generate employment opportunities. Additionally, there are mega-projects aimed at agro-industrialisation, which involve partnerships between the government, private sector, and industry players, focusing on primary production linked with processing and market penetration. The provincial industrialisation transformation, in which the Musina–Makhado SEZs and the Fetakgomo-Tubatse SEZ / Industrial hub are among the key projects to unlock the potential of the province.

The LDP has identified the following additional opportunities in this sector:

- Waste recycling facilities for waste reuse and repurposing such as tyre recycling.
- The optimization of supply chains and agro-processing using Artificial Intelligence (AI) systems
- Cross-border free trade, facilitation of linkages to global value chains, local maintenance of infrastructure, and the strengthening of rural and urban linkages through transport and communication infrastructure and industrial corridors are additional opportunities.
- Protective equipment (PPE) manufacturing, and the exploration of new commodities. The CSIR's Enterprise Creation for Development (ECD) program has been contracted by Exxaro to investigate the viability of establishing an enterprise for manufacturing PPE goods in Limpopo, which was identified by the DTI as one of the opportunities for local manufacturing. The use of PPE has become even more crucial after the outbreak of the COVID-19 pandemic.

# 3.4.4 Logistics (freight)

Logistics is an important building block of the Limpopo economy, as the province has significant volumes of minerals, agricultural and manufacturing products to be transported to domestic and international markets. Moreover, the province is strategically positioned and plays a critical role in linking the country's key ports of Durban and Richards Bay to the SADC region.

The concept of corridors plays an important role in logistics infrastructure development, specifically from a regional point of view, where infrastructure crosses boundaries or where major economic development nodes need to be connected to export facilities such as sea ports.

There are four main road freight corridors in the province (Limpopo Freight Databank, 2016):

- **Dilokong Corridor:** This corridor stretches from Polokwane to Burgersfort with the R37 provincial road as the spine of the corridor.
- Phalaborwa Corridor: The R71 and R36 are the spines of this corridor.
- **Trans-Limpopo Corridor:** This correct connects Polokwane to Musina along the N1.
- **East West Corridor:** This corridor links Polokwane to Botswana via Mokopane and the border posts at either Groblersbrug or Stockpoort.

A schematic illustration of the four corridors is given in Figure 31.



Figure 31: Freight corridors in Limpopo

The Trans-Limpopo Corridor and the East–West Corridor form part of the larger North–South Corridor (NSC), which links the ports of Durban and Richards Bay to the Copperbelt in Zambia and the DRC.

The N1 up to the Beitbridge border post between South Africa and Zimbabwe (also known as the Trans-Limpopo Corridor, which connects Polokwane to Musina) as well as the N11 from Mokopane to the Groblersbrug/ Martin's Drift border post between Botswana and South Africa (also known as East–West Corridor, which links Polokwane to Botswana via Mokopane) are both located in Limpopo and form part of the NSC.



Figure 32: North–South corridor

From the rail corridor standpoint, the Limpopo rail network form part of Transnet's two core systems network as discussed below and illustrated in Figure 33:

- Coal System: Lephalale–Ermelo–Richards Bay Rail Corridor: This corridor is a bulk export line for coal deposits in Limpopo and Mpumalanga. The coal system includes feeder lines from the Mpumalanga and Lephalale areas to the domestic destinations of Richards Bay and Maputo and include the proposed Swaziland link. The line predominantly carries export and domestic coal, as well as domestic iron ore to steel plants. This corridor has been adopted as a geographic strategic integrated project (SIP) in the National Infrastructure Plan for South Africa, commonly referred to as SIP 1: Unlocking the northern mineral belt with Waterberg as the catalyst.
- North-eastern system: This system consists of two Limpopo rail corridors:
  - The Phalaborwa–Richards Bay Corridor connects the eastern parts of Limpopo (specifically the town Phalaborwa) to the port of Richards Bay through Swaziland. The line carries magnetite and rock phosphate from Phalaborwa, as well as some agricultural products and fuel.
  - The Gauteng–Zimbabwe Corridor (N1) links Gauteng to its northern neighbour Zimbabwe through the Beitbridge border post. This corridor also forms part of the North–South Regional Corridor, offering South Africa's landlocked northern neighbours Zimbabwe, Zambia and the Democratic Republic of Congo access to international markets through the port of Durban. The N1 corridor mainly transports fuel, spare parts and goods to Zimbabwe.



Source: Transnet's Long Term Planning Framework, 2017

#### Figure 33: Core network system

Transnet anticipates significant growth in commodities on the two core systems in Limpopo between 2015 and 2046 (Transnet's Long Term Planning Framework (LTPF), 2017):

- Lephalale to Ogies (coal system): from 89.61 to 133.44 mtpa
- Groenbult to Kaapmuiden (north-eastern system): from 10.3 to 20.84 mtpa
- Musina to Pyramid (north-eastern system): from 1.94 to 20.69 mtpa

Transnet has developed a capacity intervention plan to mitigate capacity constraints in the future. The plan is outlined in Section 3.5.1.2 of this document.

The Musina–Makhado SEZs (developed separately) is expected to further boost the freight demand along both the rail and the road corridors. Intermodal facilities for the integration of road and rail movements are being investigated for implementation at both SEZs. In addition, new road and rail links from the SEZs are being investigated to link the SEZs to the N1 and the Musina– Pyramid rail corridor.

# 3.4.4.1 Impact of COVID

The lockdowns and travel restrictions led to a reduction in trade and economic activity, resulting in decreased demand for freight services. Many businesses also had to scale back or shut down operations, leading to a drop in the volume of goods being transported. Additionally, the pandemic disrupted supply chains, causing delays and creating logistical challenges for the freight industry. However, with the easing of restrictions and the resumption of economic activity, there has been a gradual recovery in the freight sector. The sector is expected to continue to play a crucial role in supporting the province's economic growth and development.

#### 3.4.4.2 Development opportunities

As previously stated, the development of the MMSEZ is expected to have a significant impact on freight demand in both the rail and road corridors. Plans are being considered to implement intermodal facilities to facilitate the integration of road and rail movements at both SEZs. Furthermore, investigations are underway to explore the construction of new road and rail links to connect the SEZs to the N1 and the Musina-Pyramid rail corridor.

# 3.4.5 Tourism

Tourism plays a critical role in the provincial economy and finds its competitive advantage in the rich biodiversity, wildlife offerings and cultural diversity of the province. Limpopo is strategically positioned to play an important role in developing cross border tourist linkages with southern Africa.

Six tourism clusters that were identified as the building blocks of the Limpopo Tourism Growth Strategy (LTGS) of 2018 to strengthen its economic position and expand the competitiveness of Limpopo as a tourist destination in southern Africa. These clusters are the family & recreation, business & events, sport & wildlife, safari and hunting and the special interest clusters.

The tourism industry in Limpopo has been greatly impacted by COVID through a decrease in domestic and international travel, cancellations of events, and closures of many tourism-related businesses. The closure of the country's borders has had a significant impact on the province's tourism industry, as international visitors cannot travel to the region. The restrictions on travel and gatherings have also led to a significant reduction in domestic tourism.

Taking the lead from the national tourism sector recovery plan developed in 2020, the Limpopo Tourism Plan was drafted in the same year and defines actions to protect, maintain, refocus, build and sustain the provincial market share and tourism infrastructure. The interventions and actions primarily focus on de-risking, marketing and branding, and providing financial and non-financial tourism supply support packages.

From a spatial perspective, the LSDF aims to spatially visualise the current competitive advantage of the tourism potential of the province, and to spatially consolidate the existing opportunities offered in the industry. This could assist to define areas with tourism potential, as well as areas for consolidation or enhancement of tourism packages.

# 3.4.5.1 Tourism competitive advantage

Figure 34 illustrates the key tourism features that constitute the province's comparative advantage. The province has a wealth of protected areas in the biosphere reserves, which form the main tourist attractions. The protected areas are made up of national parks, nature reserves, protected environmental areas, forest wilderness areas, forest nature reserves, World Heritage sites and transfrontier conservation areas.

The Greater Mapungubwe Transfrontier Conservation Area plays an important role in enhancing cross-border tourism and establishing Limpopo as a tourist gateway to southern Africa.



Source: SAPAD & SACAD (2022)

Figure 34: Limpopo's comparative advantage in tourism

# 3.4.5.2 Culture and heritage

The Mapungubwe and Makapans Caves in the Mogalakwena and Musina municipalities are World Heritage sites. A rich history of national and provincial heritage sites across the province is indicated in Figure 35.

Two national heritage sites are gazetted in the province:

- Lake Fundudzi,, Ndzelele, Vhembe District Municipality
- Makapans Valley, Mokopane, Mogalakwena Municipality

The South African Heritage Resources Agency has a record of 31 gazetted provincial heritage sites, which are spatially indicated in Figure 35. The sites include monuments, caves, ruins, Iron Age sites, missions and church sites etc.

The heritage sites are located in the protected areas and along the north–south historical route through the province.



Source: SAHRA (2022), MapIT

Figure 35:

Culture and heritage

# 3.4.5.3 Sport and wildlife

Limpopo offers unique adventure, outdoor and sporting opportunities that are closely linked to wildlife and wilderness settings. These activities are well distributed across the province and are largely concentrated in the Waterberg district and in the mountainous areas of the Lowveld.

Figure 36 illustrates activities that contribute to the sport and wildlife and safari and hunting tourism clusters of the Limpopo Tourism Plan, 2020.

The trends that emerge are clusters of related tourism offerings:

- Mountain hiking and birding areas are found in Waterberg, the Drakensberg escarpment and the Soutpansberg mountains.
- Linked to these wildness areas are clusters of sport and adventure tourism activities. These clusters are also found around the Ebenezer and Dap Naudé dams, as well as the Loskop and Blyde dams.
- Renowned golf courses are clustered at the foothills of the Waterberg biosphere and form a golf and safari route that is accessible from Gauteng.



Source: Open Street Data (2022), MapIT (2021) & Dobbin International (2016)

Figure 36: Sport & Wildlife Tourism Cluster

### 3.4.5.2 Prioritised tourism routes

Currently, there is no integrated dataset on the dedicated tourism routes in the province. Pieces of information gathered from local and provincial sources and marketing brochures are captured in Figure 37. Delineated tourism routes were found only for the Waterberg and Sekhukhune areas. These routes include the Waterberg meander and birding, craft, cultural and golfing routes.

However, the Roads Agency Limpopo has identified and prioritised tourism routes for upgrading and maintenance in support of the recovery of the tourism industry. These routes are aimed at enhancing the tourist experience by linking key tourist destinations in the province.

The provincial tourism roads that are prioritised for upgrading and maintenance are indicated in Figure 37. The majority of tourism sites in the province seem adequately linked through these prioritised routes, combined with national SANRAL routes.

However, it is critical that the roads be in a good condition to ensure a safe travel experience for visitors. For this purpose, the implementation of the maintenance and upgrading programme for these priorities roads is critical.

In conclusion, tourism is a growing sector in the province. The province has established itself as a destination for leisure and adventure travellers alike. Its scenic beauty, abundant wildlife, rich heritage experience and plethora of naturebased opportunities, provide a comprehensive tourist experience.



Source: Limpopo Roads Agency (2022), Limpopo Tourism Agency, 2022



Part C: Socio-Economic Analysis

# 3.5 Supportive infrastructure

# 3.5.1 Roads and transport

#### 3.5.1.1 Road network

Limpopo has a road network of about 24,000 km. The South African National Roads Agency SOC Limited (SANRAL) owns 3,645 km of the road network in the province, including the N1 and N11 (the only two national routes in the province) and regional roads previously owned by the province. The Roads Agency of Limpopo (RAL) owns about 20,000 km of the road network. **Error! Reference source not found.** shows the road network owned by SANRAL and RAL.

All SANRAL-owned roads are paved, while approximately 67% (about 13,000 km) of the RAL road network is unpaved. Most of the unpaved roads in the province are in the Waterberg district (about 5,000 km) and the Capricorn district (about 3,200 km).



Source: Limpopo Land Transport Framework (2022)

#### Figure 38: Limpopo road network ownership

Part C: Socio-Economic Analysis



Source: Limpopo Land Transport Framework 2022 Figure 39: Paved and unpaved roads



Source: Limpopo Land Transport Framework 2022 Figure 40: Road network length by district municipality and surface type

Approximately 30% (2,000 km) of the paved road network in the province is in a poor to very poor condition, 60% (4,000 km) in a fair or good condition, and only about 10% in very good condition. Almost 50% of the gravel roads in the province are in a good to very good condition, about 40% in a poor or very poor condition, and the rest in a fair condition (Condition data for SANRAL network is dated 2021, and for RAL 2016.).



Source: Limpopo Land Transport Framework (2022) Figure 41: Limpopo paved road condition (SANRAL and RAL)



Source: Limpopo Land Transport Framework (2022)

Figure 42: Limpopo unpaved road condition (SANRAL and RAL)

SANRAL has planned several road upgrade projects to be implemented by 2030. Those projects are at various stages of design and construction. Key projects include:

- The dualling of the N1 between the Kranskop Toll Plaza and Polokwane and the upgrading of the N1 between Polokwane and Musina, which are currently at an advanced stage of design
- The N11 Mokopane ring road, also at design stage
- A new road interchange on the R71 and the dualling of the D4020 up to the St Engenas Zion Christian Church intersection in Moria. SANRAL will implement this project in partnership with RAL.

SANRAL also has a routine road maintenance (RRM) programme in the province. In the 2022/23 financial year, SANRAL rolled out RRM projects for national roads N1, R101, R33, R516 and R520.

Given the significant percentage of unpaved roads in the province, RAL has prioritised the paving of 3,793 km of unpaved roads at an estimated cost of R37 billion. About 60% of the priority roads are in Waterberg and Capricorn, which have the highest percentages of unpaved roads. In their prioritisation, RAL considered key roads that facilitate access to key social services such as clinics, schools, hospitals and areas of economic activity, and other factors such as incomplete roads.

# 3.5.1.2 Rail network

Limpopo's rail network is approximately 1,135 km of mainlines and branch lines. The entire network is owned by Transnet SOC Limited (Transnet) and the rail stations are owned and operated by the Passenger Rail Agency of South Africa (PRASA).

According to Transnet's Long Term Planning Framework (LTPF), 2017, the rail network in the province consists of the following (also shown in **Error! Reference source not found.**):

- Pretoria–Polokwane–Musina–Beitbridge international mainline:
  - This line caters for the transportation of general freight (mainly agricultural products and fuel).

- The section of this main line that falls in Limpopo is 579 km. The line is electrified at 25,000 volts AC (25 kV) from Pyramid to Polokwane and diesel-operated from Polokwane towards the north.
- The line is a double track from Pyramid to Polokwane and a single track with crossing loops between Polokwane and Musina. Both sections carry 20 t/axle loads.
- The signals and telecoms are in a poor condition.
- The section north of Polokwane has a low train frequency, resulting in increased incidents of theft and vandalism of perway materials and informal line crossings.
- Pretoria North (Pyramid) and Rustenburg to Thabazimbi and Lephalale:
  - This line forms part of the provincial coal system, which consists of a feeder line for the transportation of coal from Lephalale to domestic destinations. The line serves the coal, iron ore and chrome mines in Limpopo and the North West. The length of the line in Limpopo is approximately 175 km. The line is electrified at 3 kV DC from Pyramid to De Wildt. This transitions to 25 kV AC up to Thabazimbi and is diesel-operated up to Lephalale.
  - It is a single-track line designed to carry axle tonnage of up to 20 t/axle.
  - The telecoms are in a poor condition.
  - Speed restrictions across public level crossings increase the section running times and result in both capacity loss and longer rolling stock turn-around time.
- Groenbult–Tzaneen–Hoedspruit (and Phalaborwa)–Kaapmuiden (Mpumalanga) line:
  - This line also forms part of the north-eastern system. The section of this line that lies in the Limpopo is approximately 319 km. The section of the line from Kaapmuiden to Phalaborwa is electrified at 3 kV and operated by CTC. The section from Tzaneen to Groenbult is dieseloperated.

- This line is a single track with crossing loops designed to carry 20 t/axle loads and can accommodate 65 wagon trains.
- The Perways and OHTEs are in a poor condition.
- While portions of the line experience congestion, the slot capacity is underutilised due to operational inefficiencies.
- All the branch lines in the province are currently inactive. They include the following:
  - Northam–Middelwit (and Dwaalboom): This is a 27 km branch line that links to Pretoria North (Pyramid) and Rustenburg at Boshoek.
  - Pienaarsrivier–Marble Hall: This is a 123 km branch line that extends from Marble Hall and links to Pretoria– Polokwane–Musina–Beitbridge.
  - Nylstroom–Vaalwater: This is a 74 km branch line that is currently closed. The line also links to Pretoria– Polokwane–Musina–Beitbridge.
  - Naboomspruit–Zebediela: This branch line is 84 km long and links to Pretoria–Polokwane–Musina–Beitbridge.

According to the Annual Freight Rail 2022 Report, two key strategic priorities for rail infrastructure are to improve the overall condition of the rail network and to secure the network against theft, vandalism and sabotage.



Figure 43: Limpopo rail network

According to Transnet's Long Term Planning Framework (LTPF), 2017, most of the core rail network will be constrained by 2035. For that reason, Transnet has developed an intervention plan to increase capacity. The following capacity interventions are planned for the rail sections in Limpopo, as detailed in LTPF, 2017:

- Lephalale–Pyramid:
  - The line may be upgraded to 24 mtpa of coal through upgrades to run 200-wagon, 20 t/axle trains.
  - The line's capacity will be expanded from 1 x 100-wagon train to 6 x 200-wagons in stages.
  - The electrification of Lephalale Thabazimbi will eliminate the need for timeconsuming traction change at Thabazimbi. Power supply constraints prevent allelectric traction, requiring 200-wagon trains to have mixed diesel–electric traction.

- The design criteria of the line do not support high-efficiency, high-volume bulk exports. Therefore, an alternative single-track heavy-haul line is planned with 26 t/axle and flatter gradients.
- Strategic short sections will be doubled to accommodate movements of chrome and ferrochrome trains.
- Musina–Pyramid:
  - Although it is anticipated that traffic along this corridor will grow significantly over the next 30 years, capacity is expected to be adequate. Hence only minor interventions are required, such as the lengthening of a small number of crossing loops to accommodate 40wagon trains.
  - It is expected that the Musina–Makhado SEZ will also be a catalyst for further growth in demand along this line.
- Groenbult–Kaapmuiden link:
  - Capacity expansion for the route is dependent on the upgrading of the Swaziland line to correspond with the introduction of the Swaziland Rail Link (SRL). As such, the line will operate 150-wagon distributed power (DP) trains in the future.
  - It is anticipated that curves will be regraded or relaxed in certain areas to improve the handling characteristics of the 150-wagon DP trains.
  - Crossing loops between Hoedspruit and Phalaborwa, namely Palmloop and Brakspruit, have been extended to accommodate 75wagon trains. These will later be extended to 1,700 m for 150-wagon trains.

Figure 44 shows the anticipated capacities at which these upgrades are proposed.

Furthermore, in the Limpopo Rail Plan, 2012, PRASA proposed that the following new rail lines be developed to serve the passenger demand in the province:

- Extension of Moloto Rail/road Corridor into Limpopo, along the Sekhukhune corridor to Burgersfort
- Makhado–Thohoyandou Link (to link Thohoyandou to the mainline at Makhado)
- Makhado–Lephalale (to provide a new line along the north-eastern corridor)
- Pretoria–Polokwane high-speed rail



Source Transnet's Long Term Planning Framework (LTPF), 2017 Figure 44: Transnet's long term capacity improvement plans

# 3.5.1.3 Aviation

Airports in Limpopo vary in size and configurations, which are determined by their function. These are divided into functional categories based on the type of service provided, i.e. international, domestic, military airports, heliports, local transport services and the size of aircraft the airport can accommodate.

The province has 10 licensed airfields (international, domestic, and private airports), but only Polokwane Airport has international recognition. There are two airports with a domestic status in the province, namely the Kruger Park Gateway (Phalaborwa) and Hoedspruit (Eastgate) airports. The Hoedspruit airport is located in an unlicensed military base, however.

The Polokwane International Airport accommodates cross-border (mainly sub-Saharan Africa) and domestic flights. It holds a Category 7 international licence and experienced approximately 60,000 passengers and 51,000 aircraft movements in the 2019/20 financial year (Gateway Airport Authority Limited, 2020).

The Kruger Park Gateway Airport caters mostly for business trips to mines and visitors to the Kruger National Park. In 2010, the airport was estimated to have a capacity of 18,000 to 20,000 passengers per year (Limpopo Airlift Strategy, 2010).

The majority of trips to and from the Hoedspruit (Eastgate) Airport are leisure trips to private games and the Kruger National Park. In 2010, this airport was also estimated to have a capacity of 18,000 to 20,000 passengers per year (Limpopo Airlift Strategy, 2010).

Table 32 contains a list of all the licensed aerodromes in Limpopo according to the Aeronautical Information Publication (AIP) as well as a brief description of the aerodromes.

All non-private airports in the province are managed by the Gateway Airport Authority Limited (GAAL).

The overview of the Limpopo Airlift Strategy, 2010, is outlined as follows:

• Lephalale Airport - There will be limited passenger traffic in the future if the mining, energy and petrochemicals developments continue as planned.

Government intervention will be required to stimulate any aviation development.

- Polokwane Polokwane has potential for both scheduled and nonscheduled passenger flights, though interventions are required to develop this demand. Any air freight developments will require significant intervention from government to materialise.
- Musina The passenger aviation demand for the Musina airport is mainly in the form of private and chartered flights, which first require the upgrading of the airport, as well as destination marketing to attract visitors.
- Thohoyandou Similar to the Musina airport, Thohoyandou first requires upgrades to the existing airport and the development of the tourism destination before passenger flights will become a possibility – and then mainly in the form of unscheduled flights.
- Giyani There is no potential from a passenger or freight perspective, though the airport itself requires some attention in line with the Safe Flying Limpopo strategy.
- Tzaneen Existing private aircraft activity is expected to continue and grow, and the airport could develop general aviation support services, though this will be done through market forces.
- Phalaborwa Airlink's ownership of the airport, together with the short runway, limits the expansion possibilities of this airport. Therefore, a maintenance strategy (rather than a development strategy) is proposed.
- Hoedspruit Hoedspruit is the only airport in the province where it is expected that growth will take place with minimum intervention. There may be an opportunity for GAAL to become involved, which may open up the opportunity to provide customs and immigration services from this airport.

Name	ICAO Location	Functional	Town Name	District Municipality	Local	Runway	Taxiway	Owner/Operator
	Indicator	Class		wunicipality	wunicipality	Paved	description	
Groblersdal	FAGL	Local	Goblersdale	Sekhukhune	Greater	Yes	Asphalt taxiway	Public Aerodrome
					Goblersdal		present	Authority: Greater
	5410			) (h. e. e. h. e		N	<b>The second second</b>	gobiersdal Municipality
LOUIS	FALO	Local	waknado	vnembe	IVIaknado	Yes	The grounds are	Public Aerodrone
Irichardt							well looked after	
							taxiway to the	Municipality
							hangars	
Marble Hall	ΕΛΝΛΙ	Local	Marble Hall	Sakhukhuna	Marble Hall	Vec	No information	Public Aerodrope
		LUCAI	Ivia Die Hall	Sekhukhuhe		165	available	Authority : Municipality
Phalaborwa	ΕΔΡΗ	Domestic	Phalaborwa	Monani	Ba-Phalahorwa	Vec	No information	Kruger Park Gateway
(Kruger Park		Domestic	1 Halabol wa	Wopum	Barriadoorwa	103	available	Airport (Pty) Ltd
Gateway)							avanable	
Pietersburg	FAPI	Local	Polokwane	Capricorn	Polokwane	Yes	Asphalt taxiway	
Muni							with a load bearing	
							capacity of 16	
Polokwane	FAPP	International	Polowane	Capricorn	Polokwane	Yes	23m Taxiway with	Limpopo Provincial
International							load bearing	Government
Airport							capacity of 80	
Tzaneen	FATZ	Local	Tshipise	Waterberg	Vhembe	Yes	No information	Private Aerodrone:
							available	Transitional Local Council
Venetia Mine	FAVM	Local	Venetia	Musina	Vhembe	Yes	No information	Private Aerodrone
							available	Authority: De Beers
								Consolidated Diamond
								Mining Company
Warmbaths	FAWA	Local	Bela-Bela	Waterberg	Bela-Bela	Yes	Asphalt taxiway	PUB Aerodrone
							with load bearing	Authority: Bela-Bela
							capacity of 52.	Municipality
Dwaalboom	FADB	Local	Dwaalboom	Waterberg	Thabazimbi	No	No information	Private Aerodrone
							available	authority : Pretoria
								Portlad Cement Co. Ltd.

 Table 32:
 Licensed aerodromes in Limpopo

# 3.5.2 Water and sanitation

#### 3.5.2.1 Water services framework

The South Africa Government is committed to ensuring that all citizens have access to reliable, sustainable, safe and affordable water services. Water services refer to water supply as well as sanitation. Access to at least a basic level of water service and a basic sanitation facility is a right that is stipulated in the Constitution of the Republic of South Africa.

Initial targets to eliminate basic water supply backlogs by 2008 and basic sanitation backlogs by 2010 were not achieved. These targets were extended to 2014 in accordance with the Millennium Development Goals (MDG). However, a considerable number of households in Limpopo remain below RDP standards in terms of water and sanitation services as indicated in section 3.2.5. An additional funding stream (the Municipal Water Infrastructure Programme) was created by National Treasury in 2013 to achieve at least an intermediate water supply in 27 priority district municipalities, which included all districts in Limpopo except Polokwane. The new national target that was announced by Cabinet in July 2014 was that the government would provide water services with 90% reliability to all citizens by 2019. The main focus of the national strategy is the eradication of basic water service backlogs through collaboration and co-operation across all spheres of government.

Significant progress has been made with regard to the supply of water supply infrastructure to communities, but the actual water is still unavailable. Projects are often not completed – often due to contractor issues, unrealistic expectations and demands from local communities, and insufficient funds. Once a project has been completed, a combination of poor operation and maintenance, together with theft and vandalism, cripple the effective supply of water.

# 3.5.2.2 The source-to-tap-to-source principle

Water is a scarce resource in South Africa in general, and specifically so in Limpopo. Planning for effective water use is critical – so the re-use of water must form part of the water supply cycle.

The concept of the water use cycle is depicted in the **Error! Reference** source not found.



#### Figure 45: Water use cycle

# 3.5.2.3 Demographic integration from a water services perspective

The Department of Water and Sanitation (DWS) created a demographic and water services backlog database in 1996 and has maintained it ever since. The need for such a parallel dataset against the Statistics South Africa data arose for four reasons. Firstly, census information initially provided insufficient coverage of water service information, although this was subsequently addressed by Statistics South Africa and included in census data from 2001

onwards. The 10-year time lapse from one census to the next is too long for effective water service planning and monitoring, which is the second reason why a parallel database became necessary. Thirdly, settlement development, including new housing projects, is dynamic and new names are given to settlement extensions on a regular basis. Water and sanitation services have to be planned at this micro-settlement level. In the census, small places are generally associated with main place names, which means that information is not always extractable for a specific new settlement extension. Finally, census information captures only the resident population, whereas circular migration is a feature of South African society. The respective water services authorities (WSAs) are obliged to provide for the water service needs of circular migrant workers and relatives of theirs who reside elsewhere but return to Limpopo for frequent and extended visits. Infrastructure must have enough capacity to cater for this increased temporary population. Budget allocations per capita would be an underestimate for the actual infrastructure required. A factor is added to the normal water demand calculations based on a per capita use to make allowance for visitors. Water infrastructure will then be adequate to provide water at any location to cater for circular migrant workers and for other travellers.

The DWS demographic dataset is referred to as the DWS Reference Framework. It forms the basis of the water services development plans (WSDPs) that all water services authorities (WSAs) must develop. It is built from settlement level upwards (each settlement has a unique number derived from its locality in a water catchment quaternary area) and comprises the following:

- Polygons (boundary) for each settlement with unique number and settlement name
- Household count and population for current year, with projections based on a distinct growth rate per settlement classification in each municipality
- Water services (water and sanitation) levels of services that reflect the backlog in services regarding infrastructure and functionality aspects
- Water services infrastructure with the focus on resource, bulk and connector services

- Very detailed data on the water treatment works and wastewater treatment works
- Data to support backlog eradication planning and costing

It is advisable that this standard demographic dataset should be used for all infrastructure and water service planning purposes in Limpopo. It is calibrated to the census but includes updated information and settlement names that are used and understood by all stakeholders. Each settlement has a unique identity number, which will facilitate integrated infrastructure planning. The WSDPs for most previous versions of Limpopo's WSAs are based on the DWS/ WSA Reference Framework dataset.

# 3.5.2.4 Population as basis for water services determination

The basis for water services determination is the population as presented in the LSDF.

A comparison was made against the most recent accepted water services population figures, the Limpopo Province Water Master Plan (LP WMP) of 2016 (which was adopted by the Office of the Premier), the StatsSA MYPE 2022, and the figures proposed in this LSDF, adapted from the household estimations. The Limpopo Province Water Master Plan was based largely on the DWS Reference Framework figures. It contains predicted figures for 5-year intervals – hence a comparison to the closest year. The figures compare well, as shown per municipal area in Table 33. The LSDF based on household projections predicts a slightly higher growth than the Limpopo Water Master Plan, whilst the MYPE 2022 predicts a lower population estimation of 6,237,430 for 2031. The variations between the data sources are again emphasised as a weakness for adequate planning, and the projections should be reviewed once the StatSA census figures for 2023 are released.

#### Table 33: Population comparison LSDF to Limpopo Water Master Plan

Population/ municipal area	LSDF 2021	LP WMP 2020	Ratio 2020 to 2021	LSDF 2031	LP WMP 2030	Ratio 2030 to 2031
Limpopo	5,907,136	6,231,941	0.948	7,024,278	6,649,736	1.056
Capricorn	1,312,556	1,520,151	0.863	1,567,002	1,674,734	0.936
Blouberg	185,518	211,712	0.876	236,036	205,017	1.151
Lepelle-Nkumpi	244,920	247,688	0.989	287,313	242,645	1.184
Molemole	131,696	137,740	0.956	154,825	134,431	1.152
Polokwane	750,421	923,011	0.813	888,828	1,092,641	0.813
Mopani	1,201,616	1,227,481	0.979	1,402,902	1,243,588	1.128
Ba-Phalaborwa	164,246	189,156	0.868	199,130	212,116	0.939
Greater Giyani	263,033	255,599	1.029	311,837	253,161	1.232
Greater Letaba	238,691	256,280	0.931	268,665	249,695	1.076
Greater Tzaneen	431,014	424,112	1.016	492,275	428,962	1.148
Maruleng	104,632	102,334	1.022	130,995	99,654	1.314
Sekhukhune	1,207,145	1,263,150	0.956	1,481,534	1,375,503	1.077
Elias Motsoaledi	278,770	299,177	0.932	320,836	326,763	0.982
Ephraim Mogale	139,940	132,554	1.056	163,480	131,875	1.240
Fetakgomo Tubatse	479,503	529,530	0.906	603,699	608,961	0.991
Makhuduthamaga	308,932	301,889	1.023	393,518	307,904	1.278
Vhembe	1,432,621	1,419,938	1.009	1,674,989	1,490,024	1.124
Collins Chabane	372,728	362,519	1.028	445,062	359,351	1.239
Makhado	440,158	428,520	1.027	507,665	431,123	1.178
Musina	111,842	141,642	0.790	150,042	189,552	0.792
Thulamela	507,894	487,257	1.042	572,219	509,998	1.122
Waterberg	753,198	801,221	0.940	897,852	865,887	1.037
Bela-Bela	71,196	81,503	0.874	81,234	93,617	0.868
Lephalale	118,420	149,976	0.790	156,835	189,486	0.828
Modimolle-Mookgophong	116,285	120,984	0.961	137,177	124,957	1.098
Mogalakwena	343,047	350,132	0.980	401,432	348,970	1.150
Thabazimbi	104,249	98,626	1.057	121,174	108,857	1.113

Source: Own calculations from draft LSDF 2023, Limpopo Water Master Plan 2016

Part C: Socio-Economic Analysis

In the Limpopo Water Master Plan, differentiated growth and water demand levels of services were used per settlement. The same basis was used for the determination of the domestic water demands for the LSDF. For this purpose, a pro rata calculation was made back to settlement level according to the ratio presented in Table 34. The Limpopo Water Master Plan method of calculating potable water demand was then used (but now based on the LSDF estimated population figures per municipality).

The settlement categorisation used for determining differentiated growth and levels of services is shown in Table 34.

Settlement class	Population 2021	Population 2027	Population 2031
Provincial growth point	848,788	1,098,644	1,189,857
District growth point	345,566	388,886	443,341
Municipal growth point	541,871	592,284	679,747
Functional town	19,384	19,348	20,848
Population concentration point	1,449,047	1,563,643	1,712,348
Local service point	285,140	299,274	324,696
Rural (scattered)	2,196,247	2,255,821	2,420,195
Farming population	221,077	232,970	233,253
Total population	5,907,120	6,450,870	7,024,285

#### Table 34: Settlement classification

# 3.5.2.5 Domestic water supply services basis: Levels of services

The DWS developed and improved a water services backlog database from 1996 to 2013. This dataset originally reflected five criteria for the RDP water

service level target. It was gradually upgraded to the current service level categorisation, which can be used to distinguish between infrastructure and functionality issues. For infrastructure, there are parameters to distinguish whether any particular settlement requires upgrading, extension or refurbishment. The database also reflects planning information on the needs and quality relating to the water sources associated with each settlement. Unfortunately, DWS did not keep this data up to date, which means that the dataset can now be used as a historical reference only.

Statistics South Africa also presented information on water supply levels in the census of 2001 and 2011, as well as in general household surveys that are conducted every year on the basis of a sample of approximately 30,000 households per province. Household water service levels are classified as follows:

- Below RDP
- Adequate to RDP standard (i.e., street taps within 200 m walking distance, 25 l/cap/day, pressure and sustainability)
- Yard connections
- House connections

The DWS database was calibrated with the census results, although it covers only actual infrastructure service levels and not infrastructure functionality. In some cases, there may be infrastructure but no water for extended periods due to managerial, financial, operational, source shortage and other constraints.

In this analysis, both these datasets are used to determine the status quo of infrastructural and operational aspects. Information from these databases is used to determine the most appropriate intervention action that is required to address services backlogs and functionality issues in particular cases. The graphs and maps that follow depict the situation for Limpopo.

The considered current levels of services of water infrastructure supply in Limpopo as a whole is shown in Figure 46.



Figure 46: Limpopo water supply infrastructure level of service

Water	Population 2021					
services authority	< RDP	At RDP	Yard connections	House connections		
Bela-Bela	1,272	4,632	4,383	60,909		
Capricorn	171,004	110,030	197,536	83,606		
Lephalale	8,912	26,998	27,573	54,937		
Modimolle- Mookgophong	7,215	11,941	22,307	74,823		
Mogalakwena	54,195	80,928	105,208	102,716		
Mopani	326,642	293,411	305,241	276,321		
Polokwane	47,539	84,862	269,501	348,520		
Sekhukhune	343,076	274,245	440,118	149,708		
Thabazimbi	12,188	17,226	11,569	63,266		
Vhembe	404,848	429,908	285,668	312,198		
TOTAL	1,376,891	1,334,181	1,669,104	1,527,004		

Table 35: Household water service levels per WSA

Source: Stats SA General Household Survey 2021

Limpopo's water and sanitation needs (2013) are indicated in Figure 47 to Figure 50. The figures are the 2013 DWS Reference Framework information for the Province as a means to illustrate needs that communities have for access to adequate water services levels. There were no substantial changes during this period; in fact, operational problems escalated.

This presentation format has been discontinued. Although the information is dated (10 years old), it is still indicative of the current problems, albeit at different percentages.

The spatial representation of the level of water supply in the province is shown in Figure 51. There are significant concentrations of settlements with below RDP level of services, especially in the north-western parts of Capricorn, the larger part of Vhembe and Mopani, and the most dispersed settlements in Sekhukhune. The remainder of communities on traditional or communal land have either at RDP or access with yard connections. Household connections are primarily the level of service found in formal towns across the province.



#### Figure 47: Water needs per settlement, 2013

Source: 2013 DWS Reference Framework



#### Figure 48: Water needs per category, 2013

Source: 2013 DWS Reference Framework

Part C: Socio-Economic Analysis



#### Figure 49: Sanitation needs per settlement, 2013

Source: 2013 DWS Reference Framework



#### Figure 50: Sanitation needs per category, 2013

Source: 2013 DWS Reference Framework



Figure 51: Limpopo water service levels, 2016

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

# 3.5.2.6 Sanitation: Levels of service

In 2019, 63.7% of households in Limpopo had access to improved sanitation services (increased from 26,9% in 2002).

When technology choices are considered for service provision, the choice has generally been full flush or latrine-based technologies. The technology choice is based on interlinked determinants such as availability of water, proximity in relation to the existing sewer network, and cost.

South Africa is a semi-arid country, with a projected 17% water deficit between demand and supply by 2030. The projected water deficit and climate change impact will have a significant impact on the traditional way of providing waterborne sanitation and requires a reconsideration of sanitation provision, with more investment in non-sewered, low-water, and waterless sanitation solutions.

Because Limpopo has a significant number of rural settlements, the development of water and sanitation infrastructure in support of strategic developments becomes a significant priority.

Sanitation provision has designated levels of service. The latest information for Limpopo is shown in Table 36.

#### Table 36: Sanitation levels of service

Sanitation levels of service	Percentage
Flush Toilet connected to a public sewerage system	18.6%
Flush toilet connected to a septic or conservancy tank	5.9%
Pour flush toilet connected to a septic tank or pit	0.5%
Chemical toilet	0.1%
Pit latrine with ventilated pipe	38.5%
Pit latrine without a ventilated pipe	34.4%
Bucket toilet collected by municipality	0.1%
Bucket toilet emptied by household	0.0%
Ecological sanitation systems	0.0%

Sanitation levels of service	Percentage
None	1.7%
Other	0.4%
Total	100.00%

Source: Central Statistics SA 2020

There is no bucket sanitation in Limpopo – the census figure of 0.1% should have been zero.

Only 26,5% of households in Limpopo had access to any type of flush toilet, the lowest of all the provinces in South Africa. In the absence of flush toilets, the majority of households in Limpopo used pit latrines, most without ventilation pipes (StatsSA 2020).

Current sanitation infrastructure is inadequate, and the condition of existing sanitation infrastructure will not be able to cater for new major developments. Water is a scarce resource, and the construction of waterborne sanitation infrastructure will have to be aligned with water supply availability and planning. Alternative sanitation systems must be considered and investigated.

The locality of waste water treatment works in the province are illustrated in Figure 52, as well as the need for refurbishment.



Figure 52: Wastewater treatment works

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

#### 3.5.2.6.1 Sanitation infrastructure per district

This section provide information in respect of the current situation with bulk sanitation infrastructure for each district.

Across all districts, there are no sanitation master plans in place to assist in sanitation planning and the alignment of waterborne sanitation systems with available water supply and required developments, except in the case of Polokwane municipality. Also the main driver for sanitation backlog eradication is currently addressing dry-sanitation infrastructure in rural communities across the province.

#### Capricorn district sanitation



Figure 53: Existing sanitation infrastructure in Capricorn district

In the Capricorn district, a total of 23 waterborne wastewater treatment works (WWTWs) are currently in operation. They are located in the following municipalities:

- Blouberg Municipality: 2
- Lepelle Nkumpi Municipality: 5
- Molemole Municipality: 3
- Polokwane Municipality: 13

The Polokwane Municipality recently developed an updated strategy in which the challenges they are experiencing with regard to wastewater treatment capacity are addressed. The challenges are currently being addressed in a phased approach considering available resources as well as development proposals.

The current state of sanitation in Capricorn will not be able to sustain future developments unless new programmes are implemented. The constrained capacity of internal bulk sewers has also been identified as a backlog to be addressed.

#### Mopani district sanitation



Figure 54: Existing sanitation infrastructure in Mopani district

In the Mopani district, a total of 29 waterborne wastewater treatment works are currently in operation in the following municipalities:

- Ba-Phalaborwa Municipality: 12
- Greater Giyani Municipality: 2
- Greater Letaba Municipality: 3
- Greater Tzaneen Municipality: 8
- Maruleng Municipality: 4

The following are challenges relating to sanitation supply in the district:

• There is a huge backlog against a small allocation, which makes it difficult to reduce or close the backlog.

- There is an increased number of households that need sanitation services.
   Wastewater treatment facilities have limited capacity to cater for rapid increase of households.
- Funds are needed for the upgrading of treatment works.

#### Sekhukhune district sanitation



#### Figure 55: Existing sanitation infrastructure in Sekhukhune district

There is a total of 30 waterborne wastewater treatment works in operation In the Sekhukhune district, located in the following municipalities:

- Elias Motsoaledi Municipality: 5
- Ephraim Mogale Municipality: 4
- Fetakgomo Tubatse Municipality: 13
- Makhuduthamaga Municipality: 8

#### Vhembe district sanitation



#### Figure 56: Existing sanitation infrastructure in Vhembe district

In the Vhembe district, a total of 32 waterborne wastewater treatment works are currently in operation across the following municipalities:

- MakhadoMunicipality: 11
- Musina Municipality: 9
- Collins Chabane Municipality: 5
- Thulamela Municipality: 7

The Vhembe District Municipality is responsible for operating and maintaining the wastewater treatment works and related sewer pump stations.

#### Waterberg district sanitation



#### Figure 57: Existing sanitation infrastructure in Waterberg district

There are 27 waterborne wastewater treatment works in operation in Waterberg district. They are located in the following municipalities:

- Bela-Bela Municipality: 3
- Lephalale Municipality: 5
- Mookgophong-Modimolle Municipality: 7
- Mogalakwena Municipality: 9
- Thabazimbi Municipality: 3

The eradication of the sanitation backlog is focussed towards the rural communities located in the Lephalale and Mogalakwena municipalities.

Key challenges include:

- Aged bulk infrastructure in some urban and rural areas
- Insufficient budget for the operation and maintenance of water infrastructure in rural villages
Insufficient capacity for waste water treatment work

#### 3.5.2.7 Water requirements

#### 3.5.2.7.1 Potable water

The water services authority is responsible for providing potable water. They can either provide the water themselves or appoint a water services provider to provide the water on their behalf.

Factors that are considered when water demand is calculated are shown in Figure 58.

The Potable Water Demand Model allows for an increase in water demand for social and economic upliftment. The Demand model does not make allowance for the wastage of water; Water Conservation and Water Demand Management (WC&WDM) measures should be put in place to prevent the uncontrolled use and wastage of water. No provision is made in the domestic demand model for agriculture and livestock. (Separate infrastructure systems are to be provided for this.)

Figure 59 shows the domestic water requirement for the increased domestic water demand range. The probable water demand for Limpopo increases from 667 MI/day in 2021 to 1,177 MI/day in 2031 – an increase of 76% water demand over 10 years.





Figure 59: Limpopo potable water demand 2021 to 2031

Figure 58: Factors considered when water demand is calculated



Figure 60: Potable water demand per district in 2021

Table 37 and Table 38 contain a further breakdown of the figures.

#### Table 37: Potable water

District	Domestic	Associated	Bus & Ind	Losses	Total			
District		Volume (MI/day)						
Capricorn	106.028	19.865	38.127	21.676	185.70			
Mopani	73.952	12.610	25.199	13.736	125.50			
Sekhukhune	57.881	10.380	10.323	9.723	88.31			
Vhembe	83.256	15.381	38.203	16.015	152.86			
Waterberg	77.161	14.357	16.910	16.874	125.30			
Totals	398.278	72.593	128.762	78.024	677.657			

#### Table 38: Probable demand for potable water

Probable demand for Limpopo (GADD)			
Year Volume (MI/d)			
2021	678		
2023	775		
2027	973		
2031	1,177		

All potable water demand figures include for losses, i.e. it represents the gross average daily demand (GADD).

#### 3.5.2.7.2 Agricultural water demand

According to the Limpopo Department of Agriculture, the total irrigated area and the calculated water demand for 2015 are shown in Table 39.

#### Table 39: Agricultural water demand

District	Irrigated area (ha)	Main crops under irrigation	2015 water demand (8,000 m³/ha/a) Mm³/a
Capricorn	12,185	Citrus, potatoes, pastures, maize, vegetables	97.5
Mopani	44,456	Citrus, subtropical fruit, tomatoes, vegetables	355.6
Sekhukhune	31,338	Citrus, grapes, maize, grains, vegetables	250.7
Vhembe	24,616	Nuts, citrus, subtropical fruit, tomatoes, vegetables	196.9
Waterberg	45,937	Citrus, grapes, grains, vegetables	367.5
Total	158,530		1,268.3

Source: Limpopo Department of Agriculture, 2015

The existing irrigated area of 158,530 ha was planned to have increased to 200,000 ha by 2019, according to the National Development Plan (i.e. a 26% increase). The existing irrigation water requirement of 8,000 m<sup>3</sup>/ha/annum

with a growth rate of 0.5% per year after 2019 will increase to 1,472.95 Mm<sup>3</sup>/a by 2045. This is equivalent to the volume or capacity of just over 4 De Hoop Dams or the yield of 23 De Hoop Dams by 2045.

If more scientific farming practices are introduced, and if water is used more efficiently, it is expected that agriculture's contribution to Limpopo's GDP can increase.

#### 3.5.2.7.1 Livestock water requirements

Estimates from various databases and census were taken to determine the average drinking water requirements per animal per day and the numbers of animals. The calculated water requirement for livestock and game by 2015 was obtained by multiplying the litre per animal per day by the total number of animals. This figure was then increased by 0.1% per annum up until 2045 in 5-year increments to represent some growth.

	Livestock water demand (Mm³/a)				
	2015	2020	2025	2030	2045
Livestock (Census 2010 increased by 0.1% per annum) Mm³/a	22.23	22.34	22.46	22.57	22.91
Wild animals (different surveys increased by 0.1% per annum) inside KNP Mm <sup>3</sup> /a	2.01	2.02	2.03	2.04	2.07
Wild animals (different surveys increased by 0.1% per annum) outside KNP Mm <sup>3</sup> /a	6.21	6.24	6.27	6.30	6.40
Total (Mm <sup>3</sup> /a)	30.45	30.60	30.76	30.91	31.38

#### Table 40: Livestock water requirement

#### 3.5.2.7.1 Forestry water requirements

The forestry water requirements for Limpopo are shown in Table 41.

 Table 41:
 Forestry water requirements

Local	Area	2020	2025	2030	2045	
municipality	(na)	Volume (Mm³/a)				
Greater Letaba	7,177	4.807	4.831	4.855	4.928	
Greater Tzaneen	34,553	26.370	26.502	26.662	27.038	
Lepelle-Nkumpi	676	0.567	0.569	0.572	0.581	
Makhado	338	0.148	0.148	0.149	0.151	
Molemole	2,222	0.961	0.966	0.971	0.985	
Total	44,966	32.852	33.017	33.182	33.683	

Source: DWS

The calculated water requirement of 32.69 Mm<sup>3</sup>/annum for forestry was estimated for 2015. This data was obtained from the registration and verification process undertaken by DWS (the WARMS data). The estimate was increased by 0.1% per annum up to 2045, as shown in **Error! Reference source not found.** Table 41 to represent possible growth in forestry.

#### 3.5.2.7.2 Mining

The estimated water requirements for the mining sector in Limpopo are shown in Table 42.

The water requirements for the coal and power stations in Lephalale are the highest in the mining sector.

An increase in water demand is estimated for the platinum and chrome operations in Sekhukhune and Mogalakwena.

The water requirements for the Phalaborwa and Musina diamond industries remain constant.

#### Table 42: Water requirements for the mining sector

District	Lessi municipality	Commodity.	Mining sector water demand (Mm <sup>3</sup> /a)				
District		Commodity	2015	2020	2025	2030	2045
Capricorn	Polokwane	Platinum smelter	0.8	0.8	1	1.5	2
Capricorn	Polokwane	Silicon and other	0.5	1	1.5	1.5	2
Capricorn	Polokwane (Aganang)	Platinum	0	0	0	5	5
Mopani	Phalaborwa	Copper and phosphate	20	20	20	20	20
Sekhukhune	Tubatse	Platinum and chrome	17	24	34	40	46
Sekhukhune	Fetakgomo	Platinum	6	6	6	6	6
Vhembe	Musina	Diamonds	5	5	5	5	5
Vhembe	Makhado & Musina	Coal	0	7	14	18	18
Waterberg	Lephalale	Coal and power stations	30	70	100	120	150
Waterberg	Thabazimbi	Platinum	9	10	11	12	13
Waterberg	Mogalakwena	Platinum and other	10	16	20	24	30
	Total		98.3	159.8	212.5	253	297

#### 3.5.2.7.3 Total water demand

The following actions are required for potable water provision:

- WSAs must plan, organise, lead and control the water sector.
- The effective management of water services requires the measurement of water volumes from source to tap.
- The Water Demand Model is an important planning tool and it should be further developed and maintained to ensure the integrity of information for water demand, water resources and the water balance.
- The accurate metering of water used needs to be made a priority at WSAs so that historical records can be used to calibrate theoretical models.

The total water demand distribution per demand sector for Limpopo is shown in Table 43. Clearly the agriculture sector has the largest demand for water, followed by potable water.

#### Table 43: Total water demand per sector

Demand sector	2020/2021	2030/31		
	Volume (Mm³/a)			
Potable	247.3	429.6		
Agriculture	1,597.7	2,602.5		
Mining	159.8	253.0		
Livestock	30.6	30.9		
Forestry	32.9	33.2		
Total	2,068.3	3,349.2		



Figure 61: Total water demand per sector

#### 3.5.2.8 Groundwater resource

Groundwater forms an important source of water in the province.

Of the 25,372 total boreholes listed in the DWS groundwater monitoring network (GRIP) dataset, 9,129 have yield test results, 4,856 are equipped (production boreholes), 13,738 have depths, 7,873 have recorded water levels, 8,396 have recommended yields and 4,894 have recorded water strikes. This data is applied to determine the averages represented on the map in table format. The Bela-Bela municipality shows the highest average yield per borehole of 161.05 m<sup>3</sup>/day, although only 46 boreholes have yield test results for this local municipality. The Greater Tzaneen municipality represents the lowest average yield of 50.27 m<sup>3</sup>/day per borehole calculated from 493 boreholes with yield test results.

The average water strike depth for boreholes in Limpopo is 47.29 m, while the Lephalale municipality has the deepest average water strike of 101.12 m. The Thabazimbi municipality has the shallowest average water strike depth – one of 24.75 m. The average measured static water level for Limpopo is 15.90 m.



Figure 62: Average borehole depth per district municipality (m)

Source: DWS GRIP dataset







Source: DWS GRIP dataset

Figure 64: Average borehole yield per district municipality (kl/day)

Mopani

Sekhukhune

Vhembe

Waterberg

Source: DWS GRIP dataset

Capricorn

0.00

Part C: Socio-Economic Analysis

The DWS GRIP stopped operating a number of years ago. The borehole information that was logged and captured in DWS's national central database is no longer useful. However, the network can be resurrected, extended and maintained again. This data forms an important component in regional evaluations and management decisions. Monitoring data must be available for planners, consultants and managers.

Monitoring data collected from mines and other sectors forms part of the National Water Act of 1998 and the requirements for water-use authorisation. Therefore, it needs to be included in a national database.

Especially during higher rainfall periods or seasons, it should be considered to implement projects to investigate the possibility of artificially recharging the groundwater from surface water sources.

Although it has limited application in the province, rainwater harvesting and rain fog harvesting could be considered in higher rainfall regions and mountainous areas respectively to supplement the existing water supply.

Detailed geophysical investigations, correct test data and interpretations, together with time series monitoring data, will ensure more accurate targeting of structures, sustainable abstraction from boreholes and better assumptions regarding influences between groundwater sources.

The estimated available groundwater for potable water used for the LSDF is:

#### Table 44: Rationalised total groundwater for potable use

Developed (MI/d)	Potential to be developed (MI/d)	Rationalised total potential (MI/d)	
319.2	215.5	534.7	

Municipalities where water demand already significantly exceeds supply include Maruleng, Makhuduthamaga, Greater Letaba, Greater Giyani, Bela-Bela, Mogalakwena, Molemole and Blouberg, which are shown in Figure 66.



Figure 65: Groundwater use



Figure 66: Water balance: Supply versus demand

#### 3.5.2.9 Surface water resource

In terms of water resource planning, catchments or water management areas (WMAs) form the descriptive boundaries. The Limpopo Water Management Area and Olifants Water Management Area (as defined in the Second Edition of the National Water Resource Strategy - NWRS-2, 2012) are located in the province.

Catchments in Limpopo are stressed with high demand for water for development activities. The majority of available dams are fully allocated and the quality of water renders surface water a limited resource for the province's future development needs.



Figure 67: Catchment areas of South Africa



Figure 68: Catchment areas against the municipal boundaries

Major dams in the Limpopo North Water Management Area, together with yields, allocations/demands, and transfers taking place, are listed in Table 45.

#### Table 45: Major dams in Limpopo North WMA

Dams in Limpopo	Historical	Allocations (Mm³/a)		1³/a)
North WMA	Yield (Mm³/a)	Domestic	Irrigation	Other (mining)
Mokolo Dam	23.0	1.0	10.4	17.2
Doorndraai Dam	8.6	4.4	3.7	2.0
Glen Alpine Dam	5.6		5.9	
Nzhelele Dam	21.5	0.5	29.0	
Seshego Dam	1.4	0.6		
Mutshedzi Dam	3.7	3.7	1.4	
Dap Naudé Dam	5.6	4.9		
Ebernezer Dam	21.9	15.0	3.5	

Dams in Limpopo	Historical	Allocations (Mm³/a)			
North WMA	Yield (Mm³/a)	Domestic	Irrigation	Other (mining)	
Houtrivier Dam	0.6	0.6			
Albasini Dam		2.2			
Chuene/Maja Dam		0.4			
Molepo Dam		0.9			
Roodeplaat Dam	21.3	3.0			
Luphephe Dam	5.9				
Olifantspoort Weir		5.6			

The following actions are to be considered to augment surface water supply in the Limpopo North Water Management Area:

- In the Mokolo River sub-area, the feasibility for the rising of the level of the Mokolo Dam and construction of a dam in the upper reaches of Mokolo River.
- The possibility of constructing the Rooipoort Dam in the Mogalakwena River sub-area as an additional supply source has been considered. The construction of infrastructure to transfer water from the Flag Boshielo Dam in the Olifants WMA to supply new mining areas in Mokopane started in 2016.
- Growing domestic requirements in the Modimolle and Mookgophong areas will require an additional 8.5 million m<sup>3</sup>/a by 2040. The water will need to be supplied by the Roodeplaat Dam or the Klipvoor Dam on the Pienaars River (Crocodile River West).
- In the Nzhelele sub-area, the rising of the level of Nzhelele Dam (irrigation water supply), and the rising of level of the Mutshedzi Dam (domestic water supply) are possible future options. Importing water from the Mutale River or the Vondo Dam or transferring water from the Zhovhe Dam in Zimbabwe to supply coal mining developments and to augment the irrigation supply could be feasible options. Approximately 30 million m<sup>3</sup>/a can be purchased from ZINWA. Transfer from Nandoni dam a possibility.

• In the Sand River sub-area, possible future water sources identified include the development of well-fields at Albasini, Welgevonden, Nooitgedacht and Sand River in Louis Trichardt. Alternative developments include the proposed Mapungubwe Dam and Vryheid Dam.



Figure 69: The Limpopo North WMA

The Olifants River Water Supply System provides water for domestic and industrial water use purposes, irrigation, mining and power generation.

Major dams in the Olifants River catchment, with yields, allocations/demands, and transfers, are listed in Table 46. The catchment is fully allocated, and alternative sources of water are needed.

Dam	Historical yield (Mm³/a)		1:50 Yield	Allo	cation (Mm <sup>3</sup>	/a)
	Excluding EWR	Including EWR	(Mm³ /a)	Domestic	Irri- gation	Other (mining)
Blyderivierspoort Dam	110.0			2.3	60.0	
Ohrigstad Dam	18.9		19.8			
Mkombo Dam	11.7		11.7		0.4	
Rhenosterkop Dam (Weltevreden Weir)	8.1	7.6	11.7	19.8		
Rust de Winter Dam	9.8		9.8	1.6	2.0	0.5
Loskop Dam	161.0		168.0	8.4	200.7	
Bronkorspruit Dam	16.9		23.5			
Middleburg Dam	12.6		14.0			
Witbank Dam	29.5		33.0	36.1	8.0	
Tzaneen Dam			105.0			
Modjadji Dam			5.8			
Nsami Dam			0.7			
Flag Boshielo Dam	53.0	53.0	56.0	3.1	13.1	
De Hoop Dam	98.0	66.0	99.0	30.3	30.3	5.4

### Table 46: Major dams in Olifants WMA, with yields, allocations/demands and transfers

The following actions are to be considered to augment surface water supply in the Olifants River Water Management Area:

- The intention of DWS is to operate Flag Boshielo Dam and the new De Hoop Dam in conjunction to alleviate the huge water demands placed on the Flag Boshielo Dam. The infrastructure to do so is far from completion.
- Groundwater development and wastewater re-use will play a major role in supplying enough water from the Flag Boshielo Dam to meet the required demands.
- WC&WDM for irrigation and domestic water systems will free up a significant amount of water.
- Eradicating unlawful water use will ensure more water.
- A feasibility study to investigate the feasibility of getting water from the Tokwe Mukosi Dam in Zimbabwe to supply Limpopo has been tabled.

• The system yield in the Olifants WMA includes transfers of water into the Olifants River catchment from the Vaal, Usuthu and Komati River catchments, totalling 228 Mm<sup>3</sup>/a for the seven Eskom power stations in the catchment.

The Letaba catchment falls in the Olifants Water Management Area and the Luvuvhu catchment in the Limpopo Water Management Area. The catchments are almost fully developed and demands from the Letaba River currently exceed the yield capability of the system. The Letaba River is regulated mainly by Middle Letaba, Ebenezer and Tzaneen dams. The completed Nandoni Dam in the Luvuvhu catchment will be used together with the Albasini, Vondo and Damani dams and managed as one system.

The following observations are made in the National Water Resource Strategy with regard to transfers from the Luvuvhu and Letaba WMAs to neighbouring WMAs:

- The existing transfer of 2.4 Mm<sup>3</sup>/a from the Albasini Dam to Makhado in the Limpopo WMA will be removed when the Nandoni Dam supplies water to this area.
- A maximum of 18.1 Mm<sup>3</sup>/a is available from the Ebenezer and Dap Naudé dams for transfer to Polokwane in the Limpopo WSA.
- Existing transfers of approximately 0.7 Mm<sup>3</sup>/a from the Groot Letaba River for mining near Gravelotte and to domestic users in the Olifants WMA.
- To utilise Ebenezer Dam more efficiently, the risk needs to be shared by irrigators upstream and downstream of the Tzaneen Dam.
- The raising of the Tzaneen Dam has commenced, but work has stopped for a few years already. This construction project urgently needs to commence again.
- A drought analysis is urgently required for the Thabina Dam. The Ngwabu Dam needs to be constructed to supply irrigation.
- While the Nandoni Dam will bring surplus in the Luvuvhu/Mutale sub-area, the availability of water in the Great Letaba and Klein Letaba rivers will be seriously impacted by the implementation of the reserve. The new surface water development is likely to be affordable for high-value uses such as

mining and related uses. Water for poverty alleviation and rural development can partially be sourced from the Nandoni Dam or from the reallocation of irrigation water.

The estimated amount of surface water available for potable water used for this SDF is shown in Table 47.

#### Table 47: Rationalised total surface water for potable use

Developed	Potential to be developed	Rationalised total potential
(MI/d)	(MI/d)	(MI/d)
542.4	209.4	

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### 3.5.2.10 Groundwater and surface water resource summary

Summary tables for the surface water and the groundwater used in this LSDF are provided in this section. "Developed" and "potential" refer to the total volume available from a specific resource. The rationalised volume accounts for the practicalities of using the water, for example when distances are too great to warrant the source development (when it does not make economic sense)

#### Table 48: Summarised groundwater source

Descriptio	on	Develop ed (MI/d)	Potential to be develop ed (MI/d)	Total (MI/d)
	Local	620.2	438.3	1,058. 5
Croundwater courses	Wellfield	46.8	158.0	204.8
(MI/d)	CMA transfer (+/-)	6.8	0	6.8
	Total	673.8	596.2	1,270. 0
Rationalised total groundwater potential for potable use		319.2	215.5	534.7
Surface water sources	Local abstraction	160.7	2.2	162.9
	Dam	237.4	100.7	338.1
	CMA Transfer (+/-)	69.4	1.8	71.2
	Total	467.5	104.8	572.2
	Local abstraction	187.6	14.2	201.8
Rationalised surface water sources for domestic use (MI/d)	Dam	270.8	169.6	440.3
	CMA Transfer (+/-)	69.4	1.8	71.2
	Rationalised total potential (MI/d)	542.4	209.4	751.8

# 3.5.2.11 Water resource and infrastructure balance for bulk supply

The water source balance is the difference between the water demand and the water resources (and reflects either a surplus or a deficit). The combined available ground and surface water is used as the available water resource. The total domestic and business water demand is used (i.e. the potable water required by the WSA/water scheme area) and no provision is made for the wastage of water, as it is assumed that proper WC&WDM is implemented.

The water balance further assumes the total functionality of water systems per water scheme area. No provision is made for community irrigation or livestock watering in the domestic demands. The water source balance was refined to accommodate source locality and feasible infrastructure constraints, resulting in the water source infrastructure balance.

The water balance per supply scheme area is included as Appendix C. The water balance for domestic use per water scheme area is further mapped in Figure 71.

Both national urban nodes namely Polokwane and Tzaneen show deficit water balance.

Of further concern, is that the provincial areas of mining and industrial investment have also deficit water balance for domestic use, such as Tubatse area, Mogalakwena and Northam.



Figure 70: Water balance for domestic use per water scheme area

Part C: Socio-Economic Analysis



The bulk resource development and distribution balance are depicted in **Error! Reference source not found.**Figure 71.

Figure 71: Water source infrastructure balance (MI/d)

The province reaches an average deficit in 2027. (Some areas will reach this situation before 2027 and others after 2027.)

The major water resource transfer schemes identified for the province are indicated in Figure 72. The following critical strategic actions were already identified for transfer schemes that are either under stress, under construction or being planned:

- Luvuvhu River Government Transfer Scheme (LRGWS) Nandoni Dam and its bulk distribution systems:
- The adequacy of the Nandoni WTW's capacity needs to be evaluated for the Phase 2 extension (the next 60 Ml/d module). All planning, funding and programme issues for the pipe to Giyani must be addressed adequately. Assistance to the Vhembe District Municipality to fund downstream bulk infrastructure requirements of approximately R650 million.

- Magalies Water Board Transfer to Bela-Bela, Mookgophong and Modimolle – increased capacity for transfer system is urgently required. Funding of about R 2 700 M needs to be secured.
- The Olifants River Water Resources Development Project (ORWRDP and ORWSDP) – De Hoop Dam bulk and water services regional bulk distribution:
- The signing of water supply agreements by commercial users (mines) and WSAs should be pursued as a priority.
- The construction of bulk water resources and conveyance infrastructure needs to be rolled out at the same time as the municipal water services in order to minimise the risk that water infrastructure will be vandalised.
- The three regional WTWs (Ga-Malekane, Steelpoort and Mooihoek) and potable water distribution infrastructure need to be commissioned in order to provide water to communities and put an end to service delivery protests and the vandalism of infrastructure.
- The pipeline to the Olifantspoort WTW must be completed to improve the surety of supply to the Lepelle Nkumpi and Polokwane municipalities.
- RBIG funding needs to be secured to finalise and implement WSA RBIG distribution systems in parallel with reticulation systems. IRS and feasibility studies are required for some of these schemes and need to commence urgently (Nebo Plateau, Lebalelo and Tubatse).
- The provincial government, with support from CoGTA and National Treasury, must facilitate financial support to municipalities for them to provide water to domestic users at affordable tariffs.
- Additional funding must be provided to assist Polokwane and other municipalities refurbish and upgrade infrastructure in order to reduce losses.
- Mogalakwena Augmentation from Flag Boshielo Dam Mining Development and Domestic Water distribution:
- Urgent intervention is needed to expedite the Flag Boshielo raw water pipe from the dam to Mokopane by engaging with DWS and the Lebalelo Water User Association. The programming of this pipe was recently changed for later implementation due to delays in mining development. The Mogalakwena Local Municipality has exhausted its available sources and

needs this augmentation for potable water requirements as it is in a deficit situation already.

- It was proven that the Mogalakwena Local Municipality needs more than R3 billion to accelerate the implementation of their downstream 2020 bulk conveyance system for residential and mining requirements.
- Mokolo and Crocodile Water Augmentation Project (MCWAP):
- TCTA must proceed with the implementation of Phase 2 of MCWAP as mandated by the Minister of the Department of Water and Sanitation.
- The provision of water to local communities in the region must be accelerated by developing the available groundwater resources (as per the All Towns Reconciliation Strategy for the Lephalale municipality).
- The Groot Letaba River Water Development Project (GLeWaP) the construction of the Nwamitwa Dam and its water distribution infrastructure.
- The availability of funds and the sources of funding need to be confirmed. The construction cost of the infrastructure components of the project is estimated to be in excess of R3,000 million.
- Lepelle Northern Water (as the Implementing Agent) for the construction of the Nwamitwa Dam and for raising of the Tzaneen Dam to commence with the detail design of both projects as a matter of priority.
- The estimate of the amount of water available should be reviewed urgently once the hydrology of the Groot Letaba River has been recalibrated.



Figure 72: Major water resource transfers

# 3.5.2.12 Operation and maintenance: Overview and MUSSA vulnerability

The life cycle of the bulk water infrastructure of 30 years has been exceeded in the case of many of the bulk water supply infrastucture systems. More than 70% of Limpopo's water infrastructure has medium to high refurbishment needs.

It is difficult to determine how much it will cost to address the refurbishment needs. High refurbishment needs were applied to infrastructure aged more than 15 years, estimated to require 30% to 50% replacement of existing infrastructure. Infrastructure older than 10 years was estimated to require 20% to 30% existing infrastructure replacement and was classified as needing medium refurbishment intervention. The low refurbishment intervention need encompasses infrastructure aged 5 to 10 years requiring 10% to 20% replacement values. Infrastructure less than five years old was assigned as requiring no intervention in the short term.

High refurbishment intervention needs are required mostly in the Capricorn and Sekhukune districts, partly due to the high prevalence of asbestos cement pipelines in these districts.

Bulk water infrastructure has been identified and prioritised for strategic infrastructure maintenance budgeting in light of the heavy backlog on maintenance intervention nationally. It is imperative that the Limpopo Provincial Government prioritise the backlogs due to refurbishment since backlogs will inherently reduce capital budget in future.

A comprehensive infrastructure asset management system that is focused on effective and efficient service delivery should be put in place so that adequate infrastructure maintenance can be ensured. The system should cover all the contributing factors that affect the life cycle costs of infrastructure, including the following:

- Current and future demand for services requiring infrastructure to support the delivery of those services
- Current technology being used

- Current condition of available infrastructure and the costs to operate and maintain the infrastructure
- The potential remaining useful life of infrastructure
- A replacement and disposal strategy for existing infrastructure

A provisional budget forecast for the refurbishment of regional and internal bulk water infrastructure is given in Table 49. The forecase includes inflation of 8% per annum and targeting that all high refurbishment intervention needs will be attended to in the first five years and that medium intervention needs will be funded in the succeeding ten years.

#### Table 49: Estimated bulk infrastructure refurbishment budget forecast

	Amount in million rand			
Term	Bulk pipelines	Reservoirs	Pump stations	Totals
Short term	3,460	94	21	3,575
Medium term	5,247	230	472	5,950
Long term	4,171	924	86	5,181
Totals	12,878	1,248	579	14,705

A lack of attention to the important aspects in the operation and maintenance of water supply schemes leads to the deterioration of the useful life of systems and necessitates the premature replacement of many system components. Key issues that contribute to the poor operation and maintenance have been identified as follows:

- Lack of finances
- Inadequate data on operation and maintenance
- Inappropriate system design and inadequate workmanship
- Inadequate training of operators and lack of performance evaluation and regular monitoring
- Inadequate emphasis on preventive maintenance
- Lack of power and transport management
- Lack of community ownership and participation in management of services provided

- Lack of real-time field information and delayed response to system failures
- Theft and vandalism of government property

The Municipal Strategic Self-Assessment (MuSSA) is a comprehensive municipal self-assessment process that provides semi-quantitative information as to the institutional "business health" of municipal water and sanitation services. Developed via an extensive process of sector partner, municipal practitioner and technical specialist engagements, the MuSSA provide the sector with key feedback as to municipal ability to operate and maintain water services infrastructure.

Water services authorities undertake a carefully structured self-evaluation of both their performance and their expected performance in providing water and sanitation services. The process requires senior and knowledgeable municipal managers to answer five questions for each of 18 business health attributes related to service delivery in general and water and sanitation services in particular.

The latest available MuSSA scores for each water services authority are given in Table 50 read with the description of the MuSSA scoring in Figure 74. An average score for each municipality in map view is illustrated in Figure 73.



Figure 73: WSA vulnerability status 2022

Extreme Vulnerability	VI ≥ 0.75
High Vulnerability	VI ≥ 0.50
Moderate Vulnerability	VI ≥ 0.25
Low Vulnerability	VI < 0.25

#### Figure 74: Description of the MuSSA scoring

The self-assessed results seem to be optimistic in most municipal areas.

#### 2. Management Skill Level (Technical) Financial Management Customer Care (CRM) Water Safety { Compliance 6. Water Conservation & Water Demand 16. Organisational Performance Monitoring 17. Water and Sanitation Service Quality න් 1. Water and Sanitation Services Planning 9. Wastewater/ Environmental Safety & Green Drop Status Infrastructure Asset nagement (IAM) **Revenue Collection** Water Demand Management (WCDM) Date of Vulnerability Index 4. Technical Staff Capacity (Numbers) 3. Staff Skill Levels (Technical) **Basic Sanitation Financial Asset** /ulnerability Index Water Resource 15. Information Management 11. Operation & Maintenance WSA anagement Management 7. Drinking V Regulatory ( of Assets 2 4 ø. 0 œ. Very Very Bela-Bela Low High 0.22 2022 Low Low Low Low Low High High Mode= Very Very Very Very Very Very Very Very Very Mode= Mode= Low 0.75 2022 Capricorn High Low High Low Low High High High High rate rate High High High High High rate Very High Mode= Mode= Very Very Very Very Very Mode= Very Very Very High Very Very High Very 2022 Sekhukhune 0.85 Low High Low High High High rate High High rate High High rate High High Mode= Mode= Mode= Mode= Mode= Verv Mode= Mode= Lephalale High Low Low High Low 0.44 2022 Low Low Low Low Low rate rate rate High rate rate rate rate Mode= Very High Mode= Very Mode= Very Mode= Very Very Very Very High 0.56 2022 Mogalakwena Low High Low Low High Low High High High rate High rate High rate rate High Modimolle-Very Very 0.62 2022 High High Mookgophong High High High Hiah High Hiah Hiah High Hiah High High Hiah High High High Hiah Mode= Mode= Mode= Very Very Very Very Very Very Very Very Low High High Low High 0.79 2022 Mopani High High High rate High High High rate High High High High rate Mode= Mode= Mode= Mode= Mode= Very Very Very Very Very Very Mode= Polokwane High Low Low Low 0.65 2021 Low Low High rate High High High High rate High rate rate rate rate Mode= Mode= Mode= Very Mode= Mode= Mode= Mode= Very Mode= Very Very Thabazimbi 0.73 2022 High High High Low Low Low rate rate High rate rate High rate rate rate High Hiah rate Mode= Mode= Mode= Mode= Very Very Very Very 0.42 2021 Vhembe Low Low Low High Low Low Low Low Low Low rate rate rate High rate High High High

#### Table 50: Municipal strategic self-assessment (MuSSA) scores per municipality

Source: Department of Water Affairs



Figure 75: Settlements affected by serious functionality issues

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

## 3.5.2.13 Operation and maintenance: Blue Drop evaluation

Incentive-based regulation was introduced in 2008 in the form of the Blue Drop Certification programme, by means of which the Department of Water and Sanitation (DWS) measures all aspects that contribute to a sustainable water services business, and the provision of safe water to people in South Africa. This programme gives prominence to the World Health Organization's (WHO) Water Safety Planning concept as the basis for a proactive, risk-based approach to drinking water quality management from catchment to consumer. Since then, DWS has been monitoring the risk of each water supply system based on its performance against the Blue Drop Certification criteria. These results create an enabling environment whereby the water services authority (WSA) and DWS identify, prioritise and implement targeted and specific interventions to improve performance.

The Blue Drop score reflects the status of the complete water business over 12 months based on full Blue Drop assessment, whereas the Blue Drop risk rating (BDRR) is focused on specific risk indictors at a specific point in time.

One of the outcomes of incentive- and risk-based regulation is regular monitoring and reporting on the performance of the WSA to ensure that strategic operational and management plans are constantly realigned to achieve compliance and effectively manage risks for the provision of sustainable water services. For risk-based regulation, movement in BDRR is a vital tool for both the Department and the WSA to monitor and track the levels of risk in the country. The 2021 BDRR will serve as a baseline for future BDRR assessments that DWS will use to monitor and manage drinking water supply systems to ensure the delivery of safe drinking water to all communities.

BDRR is calculated and categorised as low, medium, high or critical according to a range of values.

In 2021, 10 WSAs, with a total of 87 water supply systems, were assessed in Limpopo. The assessment period for all risk indicators was July 2020 to June

2021 except for Risk Indicator C (water quality compliance), where the period was January to December 2020.

#### Table 51: Risk performance trends for Limpopo

Risk rating	Average (%)
% municipal BDRR (weighted score)	61.1
% BDRR	64.4
A: Design capacity (Mℓ/d)	10.4
C1a: % microbiological compliance	69.8
C1B: % microbiological monitoring compliance	35.6
C2a: % chemical compliance	69.7
C2B: % chemical monitoring compliance	13.8
D: % technical skills	37.9
E: % water safety plan status	15.7

The BDRR profile for Limpopo is outlined in the figures overleaf.



#### Figure 76: Blue Drop risk rating

Figure 77 shows the percentage of municipal BDRR (weighted score) for all WSAs in the province.



Figure 77: Percentage of municipal BDRR for each WSA in Limpopo



Figure 78: Blue Drop risk rating per WSA

Low	Medium	High	Critical
<50%	50%<70%	70% - <90%	90% - 100%

The results for Limpopo are summarised as follows:

- 35.6% of supply systems are in the low-risk category
- 18.4% are in the medium-risk category
- 21.8% are in the high-risk category
- 24.1% are in the critical-risk category

Figure 78 indicates that four WSAs are in the high-risk category based on the percentage of municipal BDRR. However, in the province, there are 21 supply systems in the critical-risk category and 19 in the high-risk category.

DWS will evaluate risk based on the individual BDRR score for each supply system. Water supply systems that fall in the critical-risk category are placed under regulatory focus. In such cases, a red note is assigned that requires the water services institution (WSI) to do the following:

[The WSI must] submit a detailed corrective action plan within 60 days of [the] publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvements as outlined in the Regulatory Comment. The plan will be considered against the Regulatory Comment and recommended for approval by a national regulation committee.

This note serves to initiate the Department's Enforcement Protocol.

Section 151 of the National Water Act, 1998 and Section 63 of the Water Services Act must be considered when developing and submitting these plans as required:

- Section 63 of the Water Services Act enables the Minister, in consultation with CoGTA, to request a relevant province to intervene in terms of Section 139 of the Constitution in local government. Such requests will be supported by the outcomes of this performance monitoring and WSIs' responsiveness on regulatory responses raised.
- Section 151 of the National Water Act, 1998 provides a number of noncompliances as criminal offences, such as using water otherwise than is permitted under the Act, failing to provide access to any books, accounts, documents or assets, and unlawfully and intentionally or negligently committing any act of omission that affects or is likely to affect a water resource.

The Blue Drop report is readily available; municipalities can check the report for their own scores for each supply system that was evaluated. This should be entrenched as a standard procedure – with the lists used to remedy and follow up on the results.

#### Table 52: Blue Drop risk ratings per WSA for Limpopo

WSA	No. of supply systems	Average BDRR per WSA (%)
Bela-Bela Local Municipality	3	40.1

WSA	No. of supply systems	Average BDRR per WSA (%)
Capricorn District Municipality	8	71.4
Greater Sekhukhune District Municipality	18	65.9
Lephalale Local Municipality	6	57.9
Modimolle Local Municipality	5	81.6
Mogalakwena Local Municipality	2	73.2
Mopani District Municipality	21	49.4
Polokwane Local Municipality	6	40.8
Thabazimbi Local Municipality	5	87.4
Vhembe District Municipality	13	48.5
Average		61.6
Maximum		87.4
Minimum		40.1

## 3.5.2.14 Operation and maintenance: Green Drop evaluation

Since its inception in 2008, the Green Drop regulation programme was aimed at identifying and developing core competencies that, if strengthened, would gradually and sustainably improve the standard of wastewater management in South Africa. The intention was to align the minimum requirements and best practice as a new Green Drop standard to raise the bar for wastewater management. The programme is therefore not based on the results of a limited number of random samples but is used to evaluate entire wastewater management services over a one-year audit period.

A Green Drop wastewater services audit is done to measure and compare the results of the performance of water service institutions (WSIs). Subsequently, the institution is either rewarded or penalised based on evidence of excellence (or failures) when measured against the defined standards. Benchmarks are used to help WSIs to identify gaps between their standard and industry norms. The report is designed to give comparative analysis and diagnostics to assist WSAs to focus on specific areas for improvement.

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis

A Green Drop percentage is awarded to an individual wastewater system based on the results from the audit process, where performance is measured against five key performance areas (KPAs), plus a suite of bonuses and penalties. The individual audit scores aggregate as a single (weighted) institutional Green Drop audit score. The score is weighted against the design capacities of the individual treatment plants. This score is a performance indicator of the capacity, compliance and good practice that the institution attains against the Green Drop standards, which were derived from national and international standards. The score is interpreted as follows:

- A score of  $\geq$  90% shows that the wastewater system is excellent.
- A score of < 31% indicates that the wastewater system is dysfunctional.

The Limpopo Green Drop Report 2022 is a sub-set of a national report and provides a provincial perspective with detailed results and findings for each WSA.

DWS determined that no wastewater systems scored 90% or more during the 2021 audit period. Therefore, no WSA qualified for the prestigious Green Drop Certification.



Figure 79: Green Drop score status per WSA

90 – 100% Excellent	
80-<90% Good	
50-<80% Average	
30-<50% Poor	
0-<31% Critical state	

Only the Vhembe District Municipality improved on their Green Drop score (from 12% in 2013 to 24% in 2021). The remaining WSAs relapsed to lower Green Drop scores compared to 2013 baselines. The Capricorn District Municipality achieved the highest Green Drop score in the province (39%). It is evident by the overall low audit and technical scores that a concerted effort is required on a provincial scale to improve wastewater services at all the municipalities. Fifty systems were identified as being in a critical state, compared to 32 systems in 2013. The majority of these critical systems are managed by the Greater Sekhukhune, Mopani, Mogalakwena and Vhembe district municipalities.

The provincial risk ratio for wastewater treatment works (WWTWs) regressed significantly from 74.9% in 2013 to 84.7% in 2021. The most prominent risks were observed at a treatment level, and pointed to works that exceeded their design capacity, dysfunctional processes (especially disinfection) and equipment, a lack of flow measurement, as well as effluent and sludge non-compliance.

The Green Drop scores for 2021 are summarised in Table 53.

#### Table 53: Green Drop score per WSA

Water services authority	Green Drop score (%)		
	2013	2021	
Bela-Bela Local Municipality	44	32	
Capricorn District Municipality	60	39	
Greater Sekhukhune District Municipality	40	33	
Lephalale Local Municipality	56	32	
Modimolle-Mookgophong Local Municipality	48	33	
Mogalakwena Local Municipality	84	26	
Mookgophong Local Municipality	46		
Mopani District Municipality	37	32	
Polokwane Local Municipality	65	31	
Thabazimbi Local Municipality	28	0	
Vhembe District Municipality	12	24	

No Green Drop certificates were awarded to WSAs in the province. Several systems in critical state.

There are 10 WSAs that deliver wastewater services through a sewer network that comprises 64 wastewater treatment systems and 137 network pump stations. There is a total installed treatment capacity of 213.1 Ml/d. Most of this capacity resides in 49 small to large-sized treatment plants. Seven WWTWs did not know their design capacities.

Based on the inflow figures, the treatment facilities are operating at close to 43% of their total design capacity, with the current operational flow of 92.5 Ml/d. The largest flow contributor is Polokwane at 45.5 Ml/d.

The figure of 43% implies that there is 57% spare capacity to meet the medium-term demand. However, 41 of the 64 systems (64%) WWTWs do not

monitor their inflow. The spare capacity is therefore inaccurate and can only be confirmed once all the WWTWs start measuring their inflow. The spare capacity will also be compromised at systems where some of the processes are non-operational due to dysfunctional equipment and/or structures, especially in the collector network.

The audit data shows that six systems with known design capacities are hydraulically overloaded. This figure will be higher, as there are 41 systems that are not measuring their inflows. Hence it is impossible to determine whether these systems are hydraulically overloaded. The systems with known design capacities that are hydraulically overloaded are as follows:

- Greater Sekhukhune: 3 of 16 systems (Burgersfort, Marble Hall, Steelpoort) (no inflows for the remaining 13 systems)
- Capricorn: 1 of 5 systems (Mogwadi)
- Mopani: 1 of 9 systems (Lenyenye) (no inflows for 3 systems)
- Polokwane: 1 of 3 systems (Mankweng)

#### 3.5.2.15 Provincial Strategic projects and action list

The special economic zones (SEZs) in South Africa are geographically designated areas set aside specifically for targeted economic activities to promote national economic growth and exports by using support measures to attract foreign and domestic investments and technology. The SEZs and the targeted projects identified as priority human settlement and housing development areas (PHSHDAs) require water services to function effectively. The evaluation of each of these areas is summarised in Table 54.

#### Table 54: Comments on water services provision to the SEZs and PHSHDAs

Development area	Water services	Sanitation services
Polokwane / Mankweng PHSHDA	<ul> <li>The Polokwane Local Municipality is a water services authority (WSA) and a water service provider (WSP).</li> <li>The water supplied to the urban complex of Polokwane, Seshego, Doornkraal, and Perskebult is provided from the Olifant-Sand Water Supply Scheme, the Ebenezer Dam Water Supply System, the Dap Naudé WTW, and from various wellfields in the city surrounds.</li> <li>Water from wellfields is currently being pumped straight into the reticulation network, which is bad practice. Polokwane is currently implementing various projects to centralise the wellfield distribution to storage reservoirs.</li> <li>Key challenges include:</li> <li>Capacity shortfall</li> <li>Significant backlog in terms of current potable water demand for the Polokwane/Seshego urban complex in terms of resource supply</li> <li>Insufficient bulk infrastructure supply for the development</li> </ul>	The Municipality has three wastewater treatment plants in Polokwane, Seshego, and Mankweng. The Polokwane wastewater treatment plant is the largest with a capacity of 28Ml/day and a current load of 34 Ml/day. Plans are in place with a limited budget to construct the 100 ML/day Regional Waste Water Treatment Plant, which will carry all Polokwane municipal sewage load and cater for new developments (split into two phases). The existing WWTWs serving the Polokwane-Seshego cluster do not have sufficient treatment capacity to oversee the sewage flows generated from the contributing areas only City/ Seshego and Mankweng/ Sebayeng clusters have conventional waste management services in place. The Municipality will not be able to sustain future developments unless new programmes are implemented. The insufficient capacity of internal bulk sewers has also been identified as a backlog to be addressed.
Giyani PHSHDA	The Greater Giyani Local Municipality receives its water supply from the Mopani District Municipality, which is also responsible for maintaining bulk infrastructure. The water resources in the municipality are limited to surface and groundwater, with the major surface water being the Middle Letaba Dam and the Nsami Dam. The reason behind the water supply backlog is that the Greater Giyani Local Municipality's infrastructure is inadequate to provide the municipality with water services. The Mopani District Municipality provides 56MI/d to the Greater Giyani Local Municipality provides 56MI/d to the Greater Giyani Local Municipality is at 24MI/d, the Mapuve waterworks' at 3,6MI/d and the Nsami Dam and its treatment waterworks' at 28MI/day). The Giyani water treatment works is the principal water source for the communities in the Greater Giyani municipality. The water purification plant is not functioning to its full potential and therefore needs to be upgraded and maintained. The water treatment works have a capacity of 30 MI/d but an output of only 22.5MI/d. Some of the pumps at the Giyani water treatment works are old and no longer efficient and therefore need to be replaced. The DWS in Greater Giyani has embarked on a massive project to improve water infrastructure by implementing a new pipeline and upgrading the existing water plant. The project is aimed at providing adequate water services to the Greater Giyani municipality at large.	The status of sewer reticulation in the Greater Giyani municipality can be broadly summarised as follows: A lack of waterborne sewerage reticulation throughout the municipality is a major problem. However, this is not applicable in the PHSHDA. Sewage spills are identified in many areas. Poor maintenance of the available sanitation system. A project was initiated to refurbish and upgrade the existing Giyani wastewater treatment works (WWTW). The WWTW is currently operating at a hydraulic loading of approximately 6 MI/day. It is proposed that the existing works be demolished to create space for the proposed upgraded works of 14 MI/day.

Development area	Water services	Sanitation services
Nkowankowa PHSHDA	<ul> <li>The Greater Tzaneen Municipality is acting as a water services provider (WSP) in accordance with the service level agreement (SLA) signed with the Mopani District Municipality as the water services authority (WSA). The Municipality wishes to become a WSA and has submitted proposals to the relevant authorities in this regard.</li> <li>The Tzaneen Local Municipality has two water treatment works (George's Valley – 8.5MI/d; Tzaneen Dam WTW – 6 MI/d). These water treatment works need to be upgraded to meet the water demand, which keeps increasing due to population growth and new developments. In respect of bulk infrastructure, the water quota for Nkowankowa has reached full capacity and consumption already exceeds the allocation. These constraints are having a detrimental impact on the development and servicing of a number of Nkowankowa's extensions.</li> <li>Challenges relating to water supply in the area include the following:</li> <li>Inadequate bulk water supply</li> <li>Aging water and wastewater works infrastructure</li> <li>Asbestos water pipes, which are a health hazard</li> <li>Vandalism and illegal water connections by communities</li> <li>Water services supply constraints by not being the WSA</li> <li>High number of obsolete water meters in townships affecting revenue collection</li> <li>The DWS has initiated major projects to deal with water supply challenges in the municipality. The main project is the Groot Letaba Water Augmentation Project (GLeWAP), which includes the following interventions:</li> <li>Construction of the proposed Nwamitwa Dam</li> <li>Raising of the Tzaneen Dam wall</li> </ul>	<ul> <li>The Nkowankowa PHSHDA is serviced by one main wastewater treatment works (WWTW), namely the Nkowankowa WWTW.</li> <li>The Greater Tzaneen Local Municipality is responsible for operating and maintaining the Tzaneen WWTW and related sewer pump stations. The municipality has refurbished most of the pumps that have reached their life span because these led to regular breakdowns, environmental pollution and high maintenance costs.</li> <li>The challenges relating to water supply in the municipality are as follows:</li> <li>There is a huge backlog against a small allocation, which makes it difficult to reduce or close the backlog.</li> <li>There is an increased number of households that need sanitation services. Wastewater infrastructure has limited capacity to cater for rapid increase of households.</li> <li>Funds are needed for the upgrading of the treatment works.</li> </ul>
Tzaneen PHSHDA	<ul> <li>The Greater Tzaneen Municipality is the WSP and the Mopani District Municipality the WSA.</li> <li>The Tzaneen Local Municipality has two water treatment works (George Valley – 8.5MI/d; Tzaneen Dam WTW – 6 MI/d). These water treatment works need to be upgraded in order to meet the water demand, including to supply the PHSHDA.</li> <li>Challenges relating to water supply in the area is the same as indicated for the Nkowankowa PHSHDA with the addition of:</li> <li>The 15 km long gravity feed from the Great Letaba River to George's Valley Water Plant that is aged and results in frequent pipeline bursts and loss of raw water.</li> </ul>	<ul> <li>The Tzaneen Core PHSHDA is serviced by one main wastewater treatment works (WWTW), namely the Tzaneen WWTW.</li> <li>The Greater Tzaneen Local Municipality is responsible for operating and maintaining the Tzaneen WWTW and related sewer pump stations. The municipality has refurbished most of the pumps that have reached their life span because these led to regular breakdowns, environmental pollution and high maintenance costs.</li> <li>The challenges relating to water supply in the municipality are as follows:</li> <li>There is a huge backlog against a small allocation, which makes it difficult to reduce or close the backlog.</li> </ul>

Development area	Water services	Sanitation services
	<ul> <li>The Department of Water Affairs has initiated major projects to deal with water supply challenges in the municipality. The main project is the Groot Letaba Water Augmentation Project (GLeWAP), which includes the following interventions:</li> <li>Construction of the proposed Nwamitwa Dam</li> <li>Raising of the Tzaneen Dam wall</li> </ul>	<ul> <li>There is an increased number of households that need sanitation services while the wastewater have limited capacity to cater for rapid increase of households.</li> <li>Funds are needed for the upgrading of the treatment works.</li> </ul>
Fetakgomo / Tubatse PHSHDA	The Sekhukhune District Municipality is the WSA. The Fetakgomo Tubatse Municipality is neither a WSA nor a WSP. Water is a scarce resource in the area. The main source of water for this area will be the De Hoop dam with the related infrastructure required under the ORWRDP project. Resources are available, but infrastructure to make the resources available to the development zones must be provided and planned accordingly. Due to the mountainous topography of the area, water will need to be pumped to the development zones, which will make water very expensive. Challenges in bulk electrical supply in the supply area to operate the infrastructure must be addressed (Eskom). Some of the main challenges faced in the municipality are illegal water connections, aging infrastructure, drought, a lack of financial resources, the mountainous topography of the area, and the large number of informal and scattered settlements.	<ul> <li>The current sanitation infrastructure is inadequate. As a result of its poor condition, existing sanitation infrastructure will be unable to cater for new major developments. Water is a scarce resource, and the construction of waterborne sanitation infrastructure will need to be aligned with water supply availability and planning. Alternative sanitation systems must be considered and investigated.</li> <li>To be able to deliver services to new developments in terms of its constitutional and legislative obligations, the Municipality will evaluate all applications for development against set criteria and will specifically focus on: <ul> <li>Availability and capacity of existing infrastructure (to make development more economical, sustainable and affordable)</li> <li>Ability of service contributions to fund capital requirements of service provision (not basic level)</li> <li>Ability of the Municipality to operate and maintain services provided</li> <li>Integration of proposed development into existing planning, taking cognisance of urban fringes to avoid "leapfrog" development</li> </ul></li></ul>
Musina PHSHDA	The Vhembe District Municipality, as a WSA and WSP, purchases bulk raw water from the DWS for treatment and distribution to households within its jurisdiction. There is a huge water and sanitation backlog in the district, with the national target of achieving a basic level of water and sanitation service for all by 2015 having been missed already. The Musina Local Municipality's water abstraction and consumer supply is perfectly balanced. In the urban area, 6,244 Ml/annum is abstracted from the Limpopo River and 6,244 Ml/annum is supplied to consumers. The major challenges relate to enabling water infrastructure upgrading and refurbishment. The sustainable supply of bulk water to the proposed SEZ is also critical. The National Department of Water Affairs and Sanitation is currently investigating the potential for the development of a water transfer	The Vhembe District Municipality is responsible for operating and maintaining the wastewater treatment works and related sewer pump stations. No details regarding capacities and future projects to improve the current situation are available.

Development area	Water services	Sanitation services		
	<ul> <li>agreement and scheme with Zimbabwe and other stakeholders, to supply the SEZ and to address other water needs in the region.</li> <li>The SEZ project promoters have decided to use groundwater in the initial construction phase of the project while a pipeline to draw water from the Limpopo River is being built. In the long term, the planned importation of water from Zimbabwe following the development of the new Runde-Tende and Zhovhe dams will meet the water needs of the SEZ, the surrounding coal mines, and the town.</li> <li>Key challenges include:</li> <li>Bulk water demands to accommodate the SEZ, other industrial development as well as human settlements development</li> <li>Dry boreholes due to a lack of rain</li> <li>Aged bulk infrastructure in some urban areas</li> <li>Implementation of water conservation and water demand management programme</li> <li>Insufficient budget for operations and maintenance of water infrastructure</li> <li>Aging link services infrastructure</li> </ul>			
Musina Makhado SEZ PHSHDA	Although the Musina Makhado SEZ industrial development is planned in the jurisdiction of both the Musina and Makhado Municipalities, the water supply to the southern SEZ sites is considered to be more interlinked with the Musina Local Municipality supply. The water requirements associated with the current industrial planning of the MMSEZ exceed the anticipated requirements for the area substantially. For any medium-term supply to be met, substantial infrastructure will be required to pump water in from the Musina area over a distance of approximately 50 km and a vertical lift of approximately 260 m from the Limpopo River basin. The long-term supply volume will be reached with the completion of the Musina Dam system, with an anticipated yield of 200 Mm <sup>3</sup> /a. Of that yield, 74.49 Mm <sup>3</sup> /a will be required to meet the long-term demand of the PHSHDA / SEZ. Various options to relay water from Botswana or Zimbabwe are proposed. No water resources are currently available for the development of the Muttashi hub.	The Vhembe District Municipality is responsible for the operation and maintenance of the wastewater treatment works and related sewer pump stations. No details regarding capacities and future projects to improve the current situation are available.		

Development area	Water services	Sanitation services		
Development area Thohoyandou development PHSHDA	<ul> <li>Water services</li> <li>The Vhembe District Municipality is the WSA and WSP.</li> <li>The Municipality has water demand management challenges, and there is a great need for the implementation of water demand and conservation management projects. Water loss in the district through spillages is estimated at 20% or 36 MI/day of the total production of water from all the total water produced in the schemes (181 MI/day).</li> <li>This is influenced by a lack of cost recovery for water services process, insufficient bulk meters to monitor the system, control over the communal street standpipes by communities, insufficient personnel to monitor project implementation combined with the fact that the municipality also does not have sufficient funds to meet the national targets.</li> <li>There is a need to construct additional weirs and sand wells, especially where there are strong rivers.</li> <li>Key challenges include:</li> <li>A need to install pre-paid water meters, to add from those who have been connected</li> <li>Aged bulk infrastructure in some urban areas</li> <li>Implementation of water conservation and water demand management programme</li> <li>Insufficient budget for operations and maintenance of water infrastructure</li> </ul>	Sanitation services         The Vhembe District Municipality is responsible for operating and maintaining the wastewater treatment works and related sewer pump stations.         Key challenges include:         • Wastewater plants' receiving more inflow than they are designed to         • Aged bulk infrastructure in some urban areas         • Insufficient budget for operations and maintenance of water infrastructure         • Aging link services infrastructure         No details regarding capacities and future projects to improve the current situation are available.		
Lephalale PHSHDA	<ul> <li>Aging link services lineastructure</li> <li>Water is a scarce resource in the Lephalale Municipality.</li> <li>The Lephalale Municipality is designated as a WSA and WSP.</li> <li>All the water for the urban area of the Lephalale Municipality originates from the Mokolo Dam. The Grootegeluk coal mine originally built the main supply lines, pump station, balancing dam and water purification works in the urban area.</li> <li>The supply, as well as maintenance of the dam (as an agent of DWA), is still done by the Grootegeluk coal mine. In the case of the Marapong township, which is situated near the mine/power station, purified water is supplied to the municipality by the Matimba power station. Although the municipality has benefited from investments by Exxaro and Matimba, there is a concern that as water services authority, and considering long-term development implications, the Municipality should have ownership of the infrastructure required to provide water and sanitation services to the Marapong area.</li> <li>Lephalale and Onverwacht are supplied with water that is purified at the Zeeland water treatment works, which are owned and operated by</li> </ul>	<ul> <li>Sewage discharged from the Onverwacht/Ellisras area is treated at the Paarl wastewater treatment works. The treatment works have been expanded to treat 7.25 ML sewage per day and currently have a spare capacity of 3 ML.</li> <li>Sewage from Marapong is discharged to an oxidation pond system with a reported capacity of 300 kl/day. Theoretically, the volume of sewage discharged to this treatment works exceeds the works' capacity, which means that the works need to be upgraded immediately. The Municipality is currently busy upgrading the works to a 1.5 ML/day for a conventional wastewater treatment plant. A capacity of 4.5 ML will be required by 2026. An oxidation pond will no longer suffice.</li> <li>Key challenges include:</li> <li>Aged bulk infrastructure in some urban and rural areas</li> <li>Insufficient budget for operations and maintenance of water infrastructure in rural villages</li> <li>Insufficient capacity of wastewater treatment works</li> </ul>		

Development area	Water services	Sanitation services		
	<ul> <li>Exxaro. The effluent is treated at the Paarl wastewater treatment works. Currently, the Matimba and Medupi power stations at 14.5 million m³/a, the Grootegeluk mine at 7.6 million m³/a (the Lephalale municipality at 7.2 million m³/a of the Exxaro/Matimba allocation) and the irrigation sector at 10.4 million m³/a account for the 32.5 million m³/a of water allocated from the Mokolo Dam.</li> <li>Future expansions for power generation as well as the coal requirement for such development require an additional volume of water that cannot be supplied from the resources in the Mokolo Water Management Area. Key challenges include:</li> <li>The deficit in the catchment in which the Mokolo Dam is located</li> <li>Dry boreholes due to a lack of rain</li> <li>Aged bulk infrastructure in some urban and rural areas</li> <li>Insufficient water tankering to informal settlements and farms</li> <li>Implementation of water conservation and water demand management programme</li> <li>Insufficient budget for operations and maintenance of water infrastructure in rural villages</li> <li>Mushrooming of informal settlements in urban areas</li> </ul>			
Thabazimbi – Northam PHSHDA	The Thabazimbi Local Municipality is a WSA and WSP. The current bulk supply infrastructure has a design capacity of approximately 13 ML/day, consisting of 4 ML/day from groundwater sources and 9 ML/day from the Magalies Water bulk supply scheme. Those who reside in Thabazimbi and Regorogile rely on surface water supply (Magalies Water), and it is augmented by groundwater supply. The population residing in Northam rely entirely on surface water supply (Magalies Water). The Thabazimbi Local Municipality's area of jurisdiction consists of 30 boreholes, of which 18 are operational. The population residing in Smashblock rely on groundwater supply, tractor assisting with water tinkering. Key challenges include the densification and compaction of existing settlements for the optimal use of existing services.	<ul> <li>The Thabazimbi Local Municipality is responsible for operating and maintaining the wastewater treatment works and related sewer pump stations.</li> <li>Key challenges include: <ul> <li>Densification and compaction of existing settlements for the optimal use of existing services.</li> <li>Sanitation backlogs estimated at just over 4,500 households</li> <li>The lack of capacity at the wastewater treatment works in the town of Thabazimbi to handle sewage flows</li> <li>Current flows at the wastewater treatment facilities at Northam are exceeding the facilities' capacity and require urgent attention.</li> </ul> </li> </ul>		
Mogalakwena Northern Limb Mining Development	Water Supply to Mogalakwena and the provision of raw and potable water have been included in the planning for water supply from the Flag Boshielo Dam. Indications are that Mogalakwena will again face water supply shortfalls by 2035 if development in the area takes place as anticipated.	<ul> <li>The Mogalakwena Municipality Quality of Life Study indicates that 79% of people in traditional areas and 18% of people in informal settlements have access only to basic pit latrines. The existing operational wastewater facilities are:</li> <li>Mokopane wastewater treatment works</li> </ul>		

Development area	Water services	Sanitation services	
	It is essential that the infrastructure be completed (planning started 2007, construction started 2012). Supply from the Klipvoor Dam (Magalies Water) to Mogalakwena will assist in addressing the long-term shortfall, but further resources will have to be developed for this area.	<ul> <li>Sekgakgapeng oxidation ponds</li> <li>Masodi oxidation ponds</li> <li>Rebone sewer</li> <li>Sterkwater sewer</li> <li>All these treatment works are operating above capacity and urgent refurbishment or upgrading is required. Mogalakwena is currently busy with the construction of a new regional WWTW, which will improve the current situation once completed.</li> <li>Key challenges experienced include:</li> <li>Poor performance by appointed contractors</li> <li>Approach focused on VIP toilets to eradicate backlog rather than on attending to the waterborne systems</li> <li>Lack of funding</li> <li>Poor operation and maintenance</li> <li>Growth of communities</li> </ul>	

### 3.5.3 Electricity

Eskom is the main supplier of electricity in Limpopo: Eskom supplies 83.5% of households, while the local municipalities supply 16.3% of households. As shown in **Error! Reference source not found**. Figure 80 the main supply of electricity in Limpopo is through the Eskom prepaid system, which supplies electricity to 81.4% of Limpopo's total households.



Fourteen local municipalities in the province hold National Electricity Regulator of South Africa (NERSA) distribution licences. Waterberg is the only district where all the local municipalities have distribution licences.

Most households in Limpopo use electricity as their primary source of energy. A total of 83.9% of Limpopo's households access electricity by means of an in-house prepaid meter, and 7.5% through an in-house conventional meter.

Based on the StatsSA Community Survey of 2016, a total of 5.7% of households do not have access to electricity. Waterberg and Sekhukhune are the only two districts in the province where the percentage of households with no access to electricity (12.3% and 8.1%) is higher than the provincial average (5.7%).



Figure 81: Percentage of households in Limpopo with no access to electricity, 2016

Source: StatsSA, Community Survey 2016

Figure 80: Main supply of electricity in Limpopo, 2016

Table 55: Municipalities with NERSA distribution licences per district

Capricorn	Mopani	Sekhukhune	Vhembe	Waterberg
<ul> <li>Polokwane</li> </ul>	<ul> <li>Ba-Phalaborwa</li> </ul>	<ul> <li>Ephraim</li> </ul>	<ul> <li>Musina</li> </ul>	<ul> <li>Lephalale</li> </ul>
<ul> <li>Blouberg</li> </ul>	<ul> <li>Greater</li> </ul>	Mogale	<ul> <li>Makhado</li> </ul>	<ul> <li>Bela-Bela</li> </ul>
<ul> <li>Molemole</li> </ul>	Tzaneen	<ul> <li>Elias</li> </ul>		<ul> <li>Thabazimbi</li> </ul>
		Motsoaledi		<ul> <li>Modimolle-</li> </ul>
				Mookgopong
				<ul> <li>Mogalakwena</li> </ul>

Source: StatsSA, Community Survey 2016

## 3.5.3.1 Eskom transmission network

The Eskom transmission network in the province comprises 400 kV and 275 kV and is interconnected via the 132 kV underlying distribution network. The current transmission network is shown in Figure 82.

#### 3.5.3.2 Power generation

The baseload generation in Limpopo is located in the coal-supplying mining town of Lephalale. Two coal-fired power stations are located west of the town of Lephalale, namely the Medupi and Matimba power stations.

According to the Eskom Transmission Development Plan 2022–2031, with the completion of Medupi in 2021, these two power stations can provide almost 8.5 GW of generation to the South African grid. However, since 8 August 2021, Medupi Unit 4 has been out of service due to an explosion (ESKOM, 2022).

#### 3.5.3.3 Load forecast

The 2019 peak load for the province was 2,899 MW. There was a decrease of 112 MW compared to the peak demand of 3,011 MW that was experienced in 2018 (ESKOM, 2022).



Source: ESKOM Transmission Development Plan 2022-2031

#### Figure 82: Current Limpopo transmission network

The province has three customer load networks (CLNs): Lephalale, Polokwane and Phalaborwa. According to the Eskom load forecast, the Lephalale CLN is expected to have a steady growth rate of 3.18%, which can be attributed to heavy and light industry and commercial and residential developments as spin-offs. Mining activities are also expected in the areas of the Lephalale CLN. The Polokwane CLN is expected to experience load growth at 2.44%. The Phalaborwa CLN is predicted to have a growth rate of 3.02%. This can be attributed to an increase in mining activities and possible smelting operations near Leseding Substation over the next 10 years.

#### 3.5.3.4 Planned Eskom projects

The major schemes planned by Eskom in their Transmission Development Plan 2022–2031 consist of the establishment of a 765 kV network (operated at 400 kV), the integration of the Medupi power station, and the extension of the 400 kV and 275 kV networks, which entails the installation of additional transformers at existing and new substations. The major transmission development schemes planned in Limpopo support major investment areas in the province. Those projects are discussed below.

#### Medupi transmission integration (400 kV and 765 kV)

The project is part of the original scope to integrate the Medupi power station into the grid. It entails constructing 400 kV and 765 kV lines from the vicinity of the Medupi power station to bulk power evacuation points in the Polokwane CLN and the North West.

#### Waterberg generation 400 kV stability enhancement

The following projects are required due to future planned generation projects in the Waterberg area:

- 400 kV line Medupi to Witkop (~200 km)
- 400 kV line Borutho to Silimela (~100 km)

Those projects were prioritised to ensure that the power stations in the area would remain transiently stable.

#### Nzhelele 400 kV integration

The integration of 400 kV into the Nzhelele substation is required to deload Tabor and Spencer substations and enable load growth in the northern parts of Limpopo to provide capacity to the MMSEZ southern site (Musina-Makhado RSDF). The 400 kV supply to enable this project will be sourced from Tabor and Borutho substations through two 400 kV lines.

#### Strengthening of Limpopo East Corridor

These projects will resolve transformation constraints and supply future load growth around the Spencer and Foskor substations for the next 20 years. This scheme will also introduce 400 kV corridors between the Spencer, Foskor and Merensky substations, resulting in higher transfer limits and savings in losses on the Limpopo transmission network.

#### New Silimela substation

A new 400/132 kV transmission substation will be introduced next to the existing Wolwekraal distribution substation to resolve network constraints in the Mapoch and Kwaggafontein areas. In addition, the substation will supply the long-term future load growth expected in the south-western part of the Phalaborwa CLN and deload the Simplon substation. This project is currently in execution.

#### New Sekhukhune substation

A new Sekhukhune 400/275/132 kV substation will be constructed near the Uchoba distribution substation to create additional transmission network capacity for forecasted future load growth in the Steelpoort area.

Appendix B includes a table of Eskom's network strengthening projects planned until 2031.



Source: Transmission Development Plan 2022-2031 (ESKOM, 2022)

#### Figure 83: Future Limpopo transmission network

Part C: Socio-Economic Analysis

Limpopo Spatial Development Framework - Spatial Analysis
## 3.5.3.5 Challenges

In both the DDM One Plans and the municipal IDPs, the major challenge experienced by municipalities regarding distribution licences is the funding of electrification projects, more specifically for the maintenance and upgrading of existing infrastructure. Most municipalities struggle to pay for bulk electricity purchases from Eskom. There is also continuous pressure on local electricity networks and systems, not only due to electricity shortages but also due to improper asset management practices over the past two decades. The Department of Co-operative Government and Traditional Affairs (CoGTA) is leading an initiative to support municipalities to turn this around (DMRE, 2019).

This situation has been exacerbated by an increase in load scheduling implemented nationally. Whereas power supply should be an enabler that supports the economy, it has now become a serious constraint in sustaining existing economic activities and in encouraging new investments. The spatial impact in Limpopo has not been researched to date, but the risk of the closure or relocation of major investments to areas with capacity or with alternative energy creation options may become evident.

Municipalities also experience the challenge where Eskom electrifies informal settlements, some of them illegal, without first adequately consulting with the respective municipality, COGHSTA or the state land owner. This results in an increase in invasion of areas not suitable for habitation, and areas not planned for urban development in the spatial development framework. This situation leads to conflict between all parties involved, as expectations of formalisation are created when electrical services are installed.

#### 3.5.3.6 Energy initiatives

In response to the energy challenges, a number of alternative energy initiatives have emerged, mostly driven by partnerships.

#### Hydrogen valley and hydrogen hubs

Hydrogen fuel cells are a national priority as an alternative energy source that may contribute to South Africa's decarbonisation objectives. In the South Africa Hydrogen Valley Report of October 2021 (Department of Science and Innovation, 2021), it is pointed out that global commitments towards hydrogen production and demand create an opportunity for South Africa to engage in energy export at an international level.

The Department of Science and Innovation (DSI), in partnership with Anglo American, Bambili Energy and ENGIE, is looking into opportunities to transform the Bushveld complex and larger region around Johannesburg, Mogalakwena and Durban into a hydrogen valley. Hydrogen valleys can be leveraged to kickstart the hydrogen economy, as it leads to cost savings through the shared infrastructure investments made and subsequent improvement of the cost-competitiveness of hydrogen production through economies of scale.

The selection of the corridor from Durban to Mogalakwena as a hydrogen corridor was based on existing hydrogen potential to switch many of the industrial, mobility and buildings activities to hydrogen fuel or feedstock. For example, the N1 corridor from Durban to Johannesburg presents an opportunity to deploy hydrogen trucks at scale. The N3 corridor from Durban to Johannesburg presents an opportunity to deploy hydrogen trucks at scale. A project that brings multiple benefits to the area, including improvements to air pollution, is already under review. In addition, projects for H2 mining vehicles are already being piloted in Mogalakwena. Finally, there is an opportunity to develop hydrogen in the maritime sector through the ports of Durban and Richards Bay (Department of Science and Innovation, 2021).

Three catalytic green hydrogen hubs have been identified in South Africa's hydrogen valley. These hubs have been identified based on locations with potential for a high concentration of future hydrogen demand, the possibility to produce hydrogen (e.g. access to sun/wind, water infrastructure) and contributions to the just transition. Green hydrogen hubs are located in Mogalakwena, Johannesburg and Durban/Richards Bay.

An analysis of the technical potential of the Mogalakwena hub revealed that demand may reach up to 40 kt by 2030 (high case), led by mining trucks' competitiveness.

The report describes the infrastructure constraints for each hub. For electricity supply, a dedicated RES off-the-grid supply is recommended to mitigate risks of grid unreliability and to avoid network charges and taxes.

In terms of just transition, this hub will reinforce the "green digital" strategy of the Limpopo Science and Technology Park. In addition, there are opportunities for local job creation from the hydrogen economy (e.g. O&M for electrolysers) and potential job development from transporting hydrogen via trucks.

One of the projects in the pipeline is to install fuel cells for power in the Limpopo Science and Technology Park.

#### Johannesburg hub Mogalakwena / Limpopo hub Driven by H2-based sectors Driven by mining trucks fuel switching from gray H2. for diamond, copper, feedstock substitution for titanium, and platinum and ethylene production, fuel and some demand from heavy- and catalyst for iron & steel, medium-duty trucks via N1 public buildings and buses and future private building demand Demand and supply Buildings ( Industry ( Mining Demand Mobility locations C Supply Supply locations Durban / Richards Bay hub Driven by fuel for heavy- and medium-duty trucks via N3 freight corridor, fuel for port activities including handling equipment and electricity, oil refining switching from gray H2, medium grade temperature heating, and some export potential (to be sized)

#### Figure 84: Hydrogen valley and hydrogen hubs

Source: (Department of Science and Innovation, 2021)

#### New coal

Two new coal stations have been approved in the Eskom coal procurement programme: the Khanyisa power station in the eMalahleni municipality and the Thabametsi power station at Lephalale. In the Transmission Development Plan, the assumption is an allocated generation of 750 MW to the Thabametsi power station in 2027.

#### Projects for future independent power producers

There is sufficient transmission network capacity to integrate future planned independent power producers (IPPs) in the province (ESKOM, 2022). Therefore, no additional transmission projects are required by Eskom to enable the future connection of IPPs in Limpopo. In the Transmission Development Plan, no approved IPPs are listed for Limpopo.

#### MMSEZ A renewable energy plant

A renewable energy plant is planned at the MMSEZ southern site. As part of the planning phases, an energy impact assessment was undertaken in 2021 to investigate power generation options for the MMSEZ.

The typical off-takers from the MMSEZ power project were noted to be a steel/ stainless steel plant, coking plant, pig iron plant, ferro manganese plant, ferro chrome plant, chrome plating plant and lime plant.

According to the Musina-Makhado Regional Spatial Development Framework, draft, 2022, a renewable energy plant is evident for the southern site of the MMSEZ.

#### Biomass, biogas and municipal waste

In the LDP 2020–2025, emphasis is placed on the great latent potential of distributed generation through biomass, biogas and municipal waste to help improve municipal revenues. All municipalities have sites for processing waste and sewer outfall sites. Technologies are available for these resources to be added to the generation mix at sub-utility scale. The IRP 2019 already

makes provision for distributed generation. This is intended to allow for power generation embedded within municipal distribution networks and therefore to diversify their supply base.

#### **Just Transition Framework**

The Presidential Climate Commission (PCC) is a multi-stakeholder body established in 2020 by the President of South Africa to advise on the country's climate change response and support a just transition to a low-carbon climate-resilient economy and society. The commission comprises government ministers and 22 commissioners who represent diverse perspectives of social partners, including academia, business, civil society, labour and youth. The PCC is currently hosted at the National Economic Development and Labour Council (NEDLAC) owing to its legal establishment processes currently underway.

The PCC, through a multi-stakeholder process, successfully delivered the first Just Transition Framework for South Africa, adopted by the Commission in May 2022 and approved by Cabinet in July 2022. Amongst other things, the Just Transition Framework supports major industrial development around a new green economy and local carbon sectors, and diverse ownership models to be developed in the energy transition. The process for the development of social ownership models for the energy transition, leading to the development of a work programme to develop viable models for diverse ownership of new electricity generation assets, and increased community ownership in renewable energy, is underway.

# 3.5.3.7 Electrical service provision to priority development areas

A short summary is provided of the state of planning for electrical service provision to enable the planned PHSHDAs and SEZ as national and provincial priorities. The required demands are not yet concluded for all areas, as most are still in the planning stage. The comments in Table 56 are derived from the draft development plans for the PHSHDAs and the Musina-Makhado RSDF and its master plans.

#### Table 56: Comments on electrical services provision to the SEZs and PHSHDAs

Development area	Electricity
Polokwane / Mankweng PHSHDA	Required demand: 399,480 kVA Municipal capacity: There is a capacity shortfall. The municipality will not be able to sustain future developments unless new programmes are implemented. Projects were identified to strengthen the supply. Those projects include the construction of the Bakone substation, the construction of a 66kV line from Bakone to IOTA, as well as the construction of a 90MW solar farm through PPP (currently in the planning stage).
Nkowankowa PHSHDA	Required demand: Unknown Municipal capacity: Tarentaalrand main incomer substation has an installed capacity of 180 MVA with a firm capacity of 120 MVA. The current maximum demand (including Eskom wheeling load) is 123 MVA. Eskom is busy with the construction of a new 132/66 kV substation at Letaba. The commissioning of the substation will result in the removal of 50 MVA from Tarentaalrand main substation.
	According to the forecast as per the master plan, the maximum demand is expected to reduce to 104 MVA in 2036. The current notified maximum demand is 90 MVA and it is estimated that it will be reached by 2028. However, unforeseen external factors may have an impact on the current load forecast. The current average annual demand growth per annum over 10 years is 2.68 MVA. This is expected to decrease to 1.56 MVA upon the removal of the Eskom load. The load forecast took into consideration the current known future developments within 10-and 20-year horizons.
Tzaneen PHSHDA	Required demand: Unknown
	Municipal capacity: Tarentaalrand main incomer substation has an installed capacity of 180 MVA with a firm capacity of 120 MVA. The current maximum demand (including Eskom wheeling load) is 123 MVA. Eskom is busy with the construction of a new 132/66 kV substation at Letaba. The commissioning of the substation will result in the removal of 50 MVA from Tarentaalrand main substation.
	According to the forecast as per the master plan, the maximum demand is expected to reduce to 104 MVA in 2036. The current notified maximum demand is 90 MVA and it is estimated that it will be reached by 2028. However, unforeseen external factors may have an impact on the current load forecast. The current average annual demand growth per annum over 10 years is 2.68 MVA. This is expected to decrease to 1.56 MVA upon the removal of the Eskom load. The load forecast took into consideration the current known future developments within 10-and 20-year horizons.
Fetakgomo Tubatse PHSHDA	Required demand: 53,000 kVA
	Municipal capacity: Unknown
Musina PHSHDA	Required demand: 50,000 kVA Municipal capacity: There is no backlog on electricity in municipal urban areas.
	The Musina Local Municipality has one proposed substation that will be constructed in the urban area. A 132/11 kV substation with 2 X 20 MVA transformers will be built to cater for current and future electricity demand.
Musina Makhado SEZ	An energy master plan is underway for the northern site.
PHSHDA	An energy impact assessment has been completed for the southern site. Required demand: 160 MW

Development area	Electricity
	Municipal capacity: Numerous 132/22 kV substations are evident throughout the region.
	The Nzhelele switching station 132 kV substation will need to be upgraded to provide capacity for the Musina Makhado SEZ southern site.
	Soutpan 132/22 kV Substation – A renewable energy plant is evident.
Thohoyandou development	Required demand: 67,000 KVA
PHSHDA	Municipal capacity: The following substations are located in the municipal area: Makonde, Tshikweta, Sanari.
	The current capacity is insufficient to supply all areas.
Lephalale PHSHDA	Required demand: 121,056 KVA
	Municipal capacity: The Lephalale electricity network is supplied by Eskom at 11 kV via the Lephalale main substation next to the Onverwacht
	area. The Eskom supply is generated at the Matimba power station and fed via the Matimba substation at 132 kV. The Matimba substation
	feeds the Eskom Waterberg sSubstation (Lephalale), where it is stepped down from 132 kV to 33 kV.
Thabazimbi – Northam	Required demand: 67,000 KVA
PHSHDA	Municipal capacity: Unknown
Giyani PHSHDA	Required demand: Unknown
	Municipal capacity: Unknown

# 3.5.4 Solid waste management

Figure 85 shows the spatial distribution of landfill sites in the province. The landfill sites are located along major routes and arterial roads, which means that the sites are more easily accessible.

Table 57 further provides the number of licensed and unlicensed landfill sites per district. Most of the landfill sites in the province are permitted or licensed; there are only five unlicensed sites in the Waterberg and Mopani districts. There has been a decrease in the recorded number of unlicensed landfill sites in the province: from 30 sites in 2013, many of them in rural areas, to 5 in 2023. This reduces potential environmental and health risks associated with unlicensed landfill sites.

The Capricorn District Municipality has seven licensed landfill sites and plans to expand the Weltevreden landfill sites in the Polokwane municipality.

The Mopani District Municipality has two licensed landfill sites in the Greater Tzaneen and Maruleng municipalities and one unlicensed site in the Phalaborwa municipality. The Greater Letaba Local Municipality transports waste from its municipality to the Greater Tzaneen landfill site, which is costly. The Greater Giyani Local Municipality is currently using an unlicensed waste disposal site. New landfill sites have been identified in Greater Giyani as well as in the Ba-Phalaborwa and Greater Letaba municipalities. The Waterberg District Municipality has eight licensed landfill sites and four unlicensed landfill sites, which is the highest in the province. Approximately 99.9% of the operational waste disposal and landfill sites in the district are at full capacity and most of the sites are issued with authorised closure and rehabilitation licences by the LEDET (Waterberg District IDP, 2021/22).



Figure 85: Landfill sites

There are no hazardous waste disposal sites in the province; hazardous and medicinal waste is transported to disposal facilities in Gauteng.

A waste impact assessment has been prepared for the Musina-Makhado SEZ to highlight the potential impact of waste generated by the SEZ and to provide a waste management strategy. The assessment proposes the development of a centralised waste management area and a hazardous waste management facility for the treatment or disposal of hazardous waste outside the SEZ complex. Furthermore, the assessment recommends the expansion of the Musina landfill site to manage general waste generated by the SEZ. Alternatively, a new disposal facility for the disposal of general waste should be established in close vicinity to the SEZ complex.

A shift is required in the waste management of the province to reduce the amount of waste that is disposed of at landfill sites. Waste-to-energy production can also be implemented as a response to sustainable energy production, as alluded to in the LDP 2020–2025.

Overall, information on the capacity of landfill sites is not readily available. Consequently, it is difficult to assess if the planning aligns to future planning. The information given in the Integrated Infrastructure Development Plan for the province is also insufficient to adequately align the spatial representation of this function to the LSDF review.

#### Table 57: Solid waste landfill site and remaining capacities

District municipality	Number of operational land fill sites	Unlicensed	Remaining capacity	New identified land fill sites
Capricorn	7	None	There are plans to expand the Weltevreden site, Polokwane municipality	None
Mopani	2	1		Greater Giyani Ba-Phalaborwa Greater Letaba
Sekhukhune	7	0		0
Vhembe	6	0		0
Waterberg	8	4	99% are at full capacity	1
Total	30	5		

Source: Individual District and Municipal SDFs and IDPs

# 3.5.5 Information and communication technology

The information and communication technology (ICT) sector is vital in driving global connectivity and unlocking opportunities associated with the Fourth Industrial Revolution. The National Development Plan 2030 provides a framework through which to realise South Africa's vision that by 2030 "a widespread broadband communication system will underpin a dynamic and connected vibrant information society and a knowledge economy that is more inclusive, equitable and prosperous." The findings of the After Access State of ICT in South Africa report (July 2018)<sup>6</sup> undertaken by Research ICT Africa (RIA) indicate that many people in South Africa remain marginalised from the digital vision of the NDP. Modelling of the data shows that main factors in determining the degree of digital inclusion are education, income and location. The report also indicates that in South Africa, mobile phones appear to represent a key medium for access to information, particularly among low-income earners.

The global COVID-19 pandemic further escalated the need for digital technologies and reliable ICT infrastructure to facilitate stronger connectivity and support the recovery of the provincial economy. Limpopo's economy has been driven largely by the primary economic sectors, which has limited the creation of innovative environments that prioritise ICT infrastructure and digital transformation (MMSEZ ICT Strategy, 2021). One of the greatest challenges in moving the province towards an innovation-driven economy is the lack of ICT infrastructure, i.e. unreliable electricity supply, low-tele density, low internet density and low broadband penetration.

At a national level, South Africa's internet penetration rate stood at 68.2% of the total population at the start of 2022.<sup>7</sup> According to the StatsSA General Household Survey 2021<sup>8</sup> data (which is limited to national and provincial level data), only 2.2% of households in South Africa do not have access to either landlines or cellular phones.

#### <sup>6</sup> Research ICT Africa (RIA). 2018. Policy Paper no. 5, Series 5: After Access State of ICT in South Africa. Online: <u>https://researchictafrica.net/after-access-south-africa-state -of-ict-2017-south-africa-report 04/</u>

# 3.5.5.1 Access to cell phone

Cell phones and mobile services connect people and facilitate the transmission of information, thereby enhancing economic prospects and bridging the digital divide. According to the StatsSA General Household Survey 2021, 91.2% of households in Limpopo have access to a cell phone at home, while 4.6% of households do not. This is the highest percentage of households without access to cell phones in the country, followed by KwaZulu-Natal at 3.3%.



Source: Adapted from the StatsSA. General Household Survey 2021

# Figure 86: Percentage of households with functional landline and cell phones at home by province in 2021

<sup>&</sup>lt;sup>7</sup> DataReportal. Digital 2022: South Africa. Online: <u>https://datareportal.com/reports/digital-2022-south-africa</u>

<sup>&</sup>lt;sup>8</sup> Statistics South Africa. General Household Survey 2021. Published: 23 June 2022. Provincial and national level data.

Table 58 shows households' access to the internet by place of access, urban or rural status for 2021 at a provincial and a national level. It is evident that 61.7% of households in Limpopo have access to the internet using a mobile device, indicating that mobile access to the internet has made it much more accessible to households in rural areas. Using mobile devices to access the internet includes access on cell phones or using mobile access devices such as 3G cards. The use of mobile internet access devices in rural areas (57.5% in Limpopo) still lags behind its use in urban areas.

# Table 58: Households' access to the Internet by place of access, urban/rural status, 2021

Place where internet i	s accessed	Limpopo	South Africa
At home	Metro	-	17.2%
	Urban	4.4%	8.8%
	Rural	1.3%	1.2%
	Total	1.9%	10.4%
At work	Metro	-	26.1%
	Urban	17.8%	17.1%
	Rural	4.8%	4.6%
	Total	7.3%	17.6%
Using mobile	Metro	-	73.4%
devices	Urban	79.1%	73.7%
	Rural	57.5%	59.2%
	Total	61.7%	69.4%
At internet cafes or	Metro	-	21.6%
educational facilities	Urban	1.7%	11.1%
	Rural	1.5%	3.5%
	Total	1.5%	13.6%

Source: Adapted from the StatsSA. General Household Survey 2021

The very low access (1.5% of households) to the internet by means of internet cafes or education facilities in the province, both in the urban and rural areas, needs to be flagged. In response to this service gap, the Premier mandated the provision of ICT infrastructure to educational and health facilities through the State of the Province Address in February 2023.

## 3.5.5.2 Access to internet

In the Limpopo Development Plan (2020–2025), it is emphasised that a lack of access to the internet limits access to information and digital services such as banking, healthcare, education, social services, as well as economic opportunities, and further excludes people from the digital world. Figure 87 indicates that the Western Cape has the highest percentage of access to internet in the country at 89.1%, whilst Limpopo has the lowest at 63.7% (StatsSA General Household Survey, 2021). The graph also indicates that Mpumalanga has the lowest percentage of internet access at home at 1.7%, followed by Limpopo at 1.9%.



Source: StatsSA. General Household Survey 2021

Figure 87: Percentage of households with access to the internet at home, or for which at least one member has access to or uses the internet per province for 2021

## 3.5.5.3 Broadband coverage

The National Broadband Policy calls for the implementation of an enabling, coordinated and integrated e-strategy. In this policy, it is emphasised that the role of provincial government is to enable the distribution and promotion of uptake and usage of broadband services, thus the role of being an enabler.

Although South Africa is experiencing growth in broadband and internet penetration, it significantly lags behind other major emerging and developed economies.

Broadband telecommunications infrastructure is currently being implemented in Limpopo. According to Limpopo Connexion, 50 sites have been connected to date, as illustrated in Figure 88. There are plans to further expand the network into all districts in the province, including fibre, microwave masts and broadband to enable 5G connectivity (Limpopo Development Plan, 2020– 2025).



Source: LEDA Limpopo Connexion, https://lcx.co.za/?page\_id=146



# 3.5.5.4 Provincial policy directives

In keeping with the shift associated with the Fourth Industrial Revolution (4IR) and the demands of the knowledge economy, Limpopo has made strides in setting the Limpopo Development Plan 2020–2025, which prioritises the transformation and modernisation of the provincial economy with key actions focused in the ICT sector. The positioning of the Musina-Makhado SEZ in the province also ushers in the first ICT strategy in the province that is focused on harnessing the potential of technology and digital transformation and innovation in the SEZ.

The Limpopo Development Plan 2020–2025 outlines development strategies and eight priorities to achieve Limpopo's vision. Priority 2 refers to the transformation and modernisation of the provincial economy and provides key actions in six key sectors. In the ICT sector, the key actions provide guidance on how the province can position itself in the 4IR and become an active participant in the digital economy. The key actions are summarised as follows:

- Install an enabling ICT network in partnership with the private sector and drive the large-scale installation of broadband Wi-Fi and fibre across the province. To ensure high impact and unlock education opportunities, the priority areas for installation should be tertiary institutions, schools, identified growth points, industrial hubs, and agri-hubs.
- Establish a science and technology park in Polokwane to support local innovation.
- Encourage the education system in Limpopo to invest in digital skills development with a focus on key sectors with high potential, such as such as agriculture, mining, manufacturing, information and communication technologies and electronics.
- Develop a comprehensive 4IR strategy that will provide a framework on how the province should position itself to benefit from the 4IR while managing the challenges it presents.
- Embrace the 4IR in the Musina–Makhado SEZ, as well as in the smart cities that are envisaged.

In the LDP 2020–2025, Polokwane, Tzaneen, Musina and Lephalale are identified as priority nodes for 4IR implementation in the province with the installation of dense telecommunication and internet network as a priority.

# 3.5.5.5 Strategic ICT projects

The strategic ICT projects in the province aimed at advancing the province's position in the 4IR and enhance inclusive learning are described below.

# 3.5.5.5.1 Musina–Makhado Special Economic Zone (MMSEZ) ICT Strategic Plan, 2021

The Musina–Makhado SEZ is a strategic intervention area declared by the Department of Trade and Industry to accelerate economic development through investment, export volumes, and job creation (Musina-Makhado RSDF, 2021). One of the development themes of the Musina Makhado RSDF is to develop competitive infrastructure, which includes ICT infrastructure development towards provincial and district growth points, i.e. fibre/Wi-Fi.

In keeping with this theme, the Musina–Makhado SEZ Strategic ICT Plan was developed to guide ICT implementation in the MMSEZ. The plan indicates that some of the ICT functions and services are currently being fulfilled by LEDA ICT. However, the objective is for the SEZ to provide ICT technology infrastructure that will sustain the technology demands of the 4IR, such as high-speed networks and reliable cloud services (MMSEZ ICT Strategy Plan, 2021).

## 3.5.5.5.2 Limpopo Broadband Network Project

The Limpopo Broadband Network Project is currently underway and aims to continue to roll out broadband network in collaboration with Limpopo Connexion. The project has constructed a data centre, established a network operating control centre (NOCC) and call centre, and connected 56 sites to the network using both fibre and satellite technology. The project has also rolled out 142 km of fibre in key locations to expand the coverage and availability of high-speed internet to bridge the digital divide and enable the communities to access to more services and opportunities.

### 3.5.5.5.3 Digital hub centres

As part of the Digital Hubs Programme established by the Department of Trade, Industry and Competition, digital hub centres will be established in Seshego and Nkowankowa to bridge the digital divide. The digital hubs will serve as training centres for community members. The centres also aim to equip youth to participate in the 4IR and to promote digital transformation through access to ICT-related skills training, business development support services, and workspaces, and to enable incubation mainly for young entrepreneurs operating in ICT.

The business plan and design for Seshego Digital Hub has been finalised and construction is underway. Limpopo Connexion is the operator of the hubs. The Nkowankowa Digital Hub is located in the Nkowankowa Industrial Area. Both digital hubs form part of the revitalisation initiatives for the industrial areas in which they are located.

## 3.5.5.5.4 Limpopo Science and Technology Park

The LDP (2020–2025) identifies the establishment of the Limpopo Science and Technology Park as one of the key programme opportunities of the provincial ICT sector and a catalytic project in the province. The park is an infrastructure, research and incubation initiative that will focus on research and development as well as services to support start-ups and small businesses. The park is currently underway with 218 hectares allocated for the construction of the park. According to Limpopo Connexion,<sup>9</sup> most of the feasibility and planning studies have been completed and the township establishment process is in progress, with the environmental authorisation issued. Some of the studies completed include a regional innovation strategy, a feasibility study, a master plan, a business and implementation plan and a techno-economic assessment of using fuel cells to power the data centres.

The broadband rollout and the Limpopo Science and Technology Park will be game changers for the province, both technologically and economically.

Part C: Socio-Economic Analysis

<sup>&</sup>lt;sup>9</sup> <u>https://lcx.co.za/?page\_id=146</u>

## 3.5.5.5.5 Provision of ICT resources in schools

The Premier indicated that the provision of ICT resources to learners and educators is underway (SOPA, 2023). He further indicated that Grade 1 to 8 learners in quintiles 1 to 3 select schools had been provided with tablets and laptops for their educators. This project is aimed at bridging the digital divide and enhancing inclusive learning and teaching.

Private initiatives are underway to supply ICT infrastructure to communities and schools in the province.

In conclusion, ICT is key in unlocking future economic value. However, bringing ICT coverage and technology to the largely rural areas will require tailored plans for implementation that are informed by the spatial distribution of communities to address the locational inequalities in the province. The weakness with the analysis provided above is the lack of spatial data from both public and private sector initiatives in the province.

# 3.6 Key spatial issues and synthesis from the socio-economic environment

# 3.6.1 Demography

The largest population are found in Polokwane (750,421), Thulamela (507,894), Fetakgomo Tubatse (479,503), Makhado (440,158) and Greater Tzaneen (431,014)

The highest population density is in Sekhukhune (89.2 people per square kilometre) and the lowest in Waterberg (16.8 people per square kilometre). The local municipalities with the highest population densities are Thulamela, followed by Polokwane, Greater Tzaneen and Makhuduthamaga. The local municipalities that experienced the most significant growth in population numbers from 2016-2021 were Fetakgomo Tubatse, Thulamela and Polokwane.

Residential structure growth from 2015 to 2020 show expansion of both urban and rural areas, with significant expansions of rural settlements. Settlements showing residential structure growth are in particular Seshego/ Polokwane/ Mankweng, Burgersfort/ Steelpoort and along the R37, at Lenyenye/ Nkowankowa, Namakgale/ Lulekani, Jane Furse, Lebowakgomo and the Thohoyando area. There is also a concentration at Senwabarwana, Lephalale and Modimolle. Growth is not concentrated in nodal areas only with rural settlements showing significant expansion. Higher growth is occurring towards Northam compared to Thabazimbi. The growth in Makhado seems to be in areas outside of the formal town. The growth pattern in Mogalakwena clearly follows the N11 north of Mokopane towards the mining activity and the surrounding settlements.

The largest estimated growth in household numbers is anticipated in Polokwane, Fetakgomo Tubatse and Makhuduthamaga. The projections will be reviewed upon the release of Census 2022.

There are slightly more females than males at provincial and municipal level, with the exception of Waterberg district and the following municipalities where there are more males: Thabazimbi, Lephalale, Musina and ModimolleMookgopong. The following local municipalities have the highest portion of working age (and lowest economically dependent) populations: Thabazimbi (77.8%), Lephalale (70.3%), Musina (65.3%) and Fetakgomo Tubatse (63.0%). There are correlations between the male dominant gender structure, the highest portion of working age populations and a very low elderly population. The trend observed is typical from a mining or industry dominated area where the economically active labour force migrates to the area during their working age,but return to their place of origin to retire. The opposite trend is found in certain rural areas such as Blouberg, Lepelle-Nkumpi and Molemole. The economic dependent population almost equal the working area population, and the elderly age group is higher. The female population is also a larger segment than males. This trend shows the elderly retiring at their place of origin, and women staying at home to care for dependents.

# 3.6.2 Vulnerability

The highest concentration of vulnerable people staying in poverty in terms of numbers, are found in the following municipalities (2021): Polokwane (361,638), Fetakgomo Tubatse (240,591), Thulamela (265,324), Makhado (219,430) and Greater Tzaneen (211,413). Child headed households in inadequate dwellings are concentrated in rural areas namely Collins Chabane and Greater Giyani.

The eleven local municipalities where the functional illiteracy rate is higher than the rest of Limpopo are located in areas with lower access to overall services, in particular access to education facilities. These communities are also residing in areas furthest from development corridors and areas of highest economic activity in the province. Spatially, a correlation that do exist between areas with the highest level of no schooling, such as Blouberg, and the settlements identified to have no proper travel access to existing facilities. The attainment of primary education only, relate to the most sparsely populated regions of the province where pupils must travel long distances to access secondary education.

Overall, the spatially marginalised rural areas have the highest level of socioeconomic vulnerability.

# 3.6.3 Economic trends and activities

The main contributors to total provincial GVA in 2021 were the Capricorn (31.5%) and Mopani (22.8%) districts. At local municipal level, Polokwane alone contributed close to a quarter of the provincial GVA. The seven municipalities who contribute 5% or more towards Limpopo's economy are Polokwane (24.3%), Greater Tzaneen (7.6%), Thabazimbi (6.4%), Makhado (5.7%), Ba-Phalaborwa (5.5%), Thulamela (5.1%), Greater Giyani (5%) and Fetakgomo Tubatse (5%).

From 2016 to 2021, Limpopo experienced a positive average annual GVA growth rate of 0.5%, which is higher than the national growth rate of 0.3%. The Capricorn, Mopani and Vhembe districts experienced positive average annual GVA growth rates of 0.8%, 1% and 1.8% respectively, while the Sekhukhune and Waterberg districts experienced negative average annual GVA growth rates of -0.7% and -1.1% respectively.

The dominant economic sector in the province is mining and quarrying. It made the highest contribution to provincial GVA in 2021 (31%), followed by government and community services; finance, insurance, real estate and business services; and wholesale and retail trade, catering and accommodation. Five municipalities in the province are mining dependant, with the sector contributing more the 50% of the local GVA: Thabazimbi (95.3%), Maruleng (84.5%), a-Phalaborwa (81.3%), Fetakgomo Tubatse (77.5%) and Lephalale (77.5%).

At a provincial level, only four economic industries showed positive average annual growth rates from 2016 to 2021, namely agriculture (7.8%), mining and quarrying (2.0%), finance, insurance, real estate and business services (0.7%) and government and community services (0.5%). At a district level, the same four industries showed growth in Capricorn and Mopani. In the Vhembe district, in addition to the four industries mentioned above, the manufacturing industry also showed growth. Greater Giyani is the only local municipality that showed growth in all economic industries. In the Sekhukhune and Waterberg districts, only agriculture and mining and quarrying showed positive average annual growth rates.

In general, employment showed a declining trend in all districts from 2016 to 2021. The declining trend in the overall employment rate, especially towards 2020 and 2021, is to a large extent due to the unforeseen outbreak of the COVID-19 pandemic. At a district level, unemployment showed the largest growth in the Sekhukhune and Waterberg districts from 2016 to 2021, both with average annual unemployment growth rates of 5.2%. In 2021, unemployment was the highest in the Sekhukhune district at 58.6%. At a local municipal level, unemployment was the highest in Makhuduthamaga (67.3%) and Fetakgomo Tubatse (61.0%). It is noteworthy that the latter is also one of the municipalities with high population growth rates.

The only two industries that showed a positive five-year period industry average annual growth in employment for the period 2016 to 2021, at a provincial level, were agriculture and mining and quarrying, in line with the national trend. Sekhukhune and Waterberg districts recorded negative five-year period industry average annual growth in employment for the period 2016 to 2021.

From 2016 to 2021, the tress index (and indicator of economic diversification) of Limpopo increased, which indicates that the economy of the province became more concentrated and vulnerable to exogenous variables. This was also the case for the districts Capricorn, Mopani and Vhembe. Over the same period, the tress indices of the Sekhukhune and Waterberg districts decreased, which indicates that the economies of these districts are becoming more diverse. The latter two districts currently have the least diversified economies with a heavy dependence on mining and quarrying.

In terms of competitive advantage, Capricorn has the highest number of industries (four) with high location quotients which indicates that the industries are strong enough to provide export products beyond the local border. Mopani has two highly rate industries, and the remainder of the districts only one each.

In terms of an analysis of industries which are "leading" as they have a growth rate that is greater than the rate of growth in the overall economy, or "lagging" as they are growing more slowly, industries with current or emerging strengths are identified. In Limpopo, the agriculture industry emerged as a current strength and the mining and quarrying industry as a high-priority retention

target. Sub-industries in these sectors with specific potential are agriculture and hunting (current strength), forestry and logging (current strength) and fishing, operation of fish farms (emerging strength), as well as mining of gold and uranium ore (high-priority retention target), mining of metal ores (current strength) and other mining and quarrying (current strength). The finance and insurance and other business activities sub-industries are emerging strengths.

This document contains a detailed analysis of the following key sectors: agriculture, mining and quarrying, industry and manufacturing, logistics, and tourism. The key constraints to these sectors are accessibility in terms of the road and rail network hampering access to markets for heavy haulage and dampening the tourism sector, as well as the availability of water and energy challenges.

# 3.6.4 Supportive Infrastructure

Critical infrastructure to support human settlement and economic activity include road and rail, airports, water, sanitation and electricity.

#### **Movement Network**

Limpopo has a road network of about 24,000 km, of which SANRAL owns 3,645 km including the N1 and N11 and regional roads previously owned by the province. The Roads Agency of Limpopo (RAL) owns about 20,000 km of the road network of which approximately 67% is unpaved. Approximately 30% of the paved road network and about 40% of the unpaved network are in poor to very poor condition. The quality of the road network is a concern mainly in the rural areas but also for access road to nodes such as Phalaborwa, Makhado, Thohoyandou and Burgersfort. RAL has prioritised the paving of 3,793 km of which 60% are in Waterberg and Capricorn, which have the highest percentages of unpaved roads.

Limpopo's rail network consists of the following main lines: Pretoria– Polokwane–Musina–Beitbridge international mainline, Pretoria North (Pyramid) and Rustenburg to Thabazimbi and Lephalale, and Groenbult– Tzaneen–Hoedspruit (and Phalaborwa)–Kaapmuiden (Mpumalanga). These are freight lines and are experiencing constraints in terms of poor signal telecommunication systems, speed restrictions, low train frequency in certain areas leading to increased vandalism, and operational inefficiencies limiting capacity. None of the branch lines in the province are operational. Ost of the core rail network will be capacity constrained by 2035, with capacity interventions being prioritised over new lines according to Transnet. The following new rail lines are proposed by Prasa (2012) to serve the passenger demand in the province (although implementation time frames are not clear): extension of Moloto Rail/road Corridor into Limpopo, along the Sekhukhune corridor to Burgersfort, Makhado–Thohoyandou Link (to link Thohoyandou to the mainline at Makhado), Makhado–Lephalale (to provide a new line along the north-eastern corridor) and Pretoria–Polokwane high-speed rail.

Polokwane Airport is the only international airport in the province. Kruger Park Gateway (Phalaborwa) and Hoedspruit (Eastgate; located in an unlicensed military base) are domestic airports. The airports are important for both business and leisure travel and could support he provincial tourism sector if optimally used.

#### Water and Sanitation

In terms of water provision, large numbers of communities were still receiving services under the RDP standard in 2016. This includes rural areas to the far north and south of Polokwane in Capricorn district, many of the rural settlements in Vhembe and Mopani districts, and large parts of Sekhukhune district especially in Fetakgomo Tubatse.

Only 26,5% of households in Limpopo had access to any type of flush toilet, the lowest of all the provinces in South Africa. In the absence of flush toilets, the majority of households in Limpopo used pit latrines, most without ventilation pipes (StatsSA 2020). Current sanitation infrastructure is inadequate, and the condition of existing sanitation infrastructure will not be able to cater for new major developments. Water is a scarce resource, and the construction of waterborne sanitation infrastructure will have to be aligned with water supply availability and planning. Alternative sanitation systems must be considered and investigated. At district level, currently no sanitation master plans are in place to assist in planning waterborne sanitation systems and aligning them with available water supply and required developments.

Dry-sanitation infrastructure in rural communities should be considered for sanitation backlog eradication.

In terms of water demand, 77% of water demand is by the agriculture industry, followed by demand for potable water (12%), mining (7.7%), forestry (1.6%) and livestock (1.5%).

Limpopo faces a situation of serious water shortages, measured as both water source balance and water source infrastructure balance. The water source balance is the difference between the water demand and the water resources (and reflects either a surplus or a deficit). The water source balance was refined to accommodate source locality and feasible infrastructure constraints, resulting in the water source infrastructure balance.

In terms of groundwater demand (accessed through boreholes), demand is generally outstripping supply. Municipalities where water demand already significantly exceeds supply include mostly rural areas including Greater Giyani, Maruleng, Makhuduthamaga, Greater Letaba, Bela-Bela, Mogalakwena, Molemole and Blouberg. In terms of surface water, catchments in Limpopo are stressed with high demand for water for development activities. The majority of available dams are fully allocated and the quality of water renders surface water a limited resource for the province's future development needs. In terms of water source infrastructure balance, the province will reach an average deficit in 2027.

Water issues are further exacerbated by infrastructure challenges, with more than 70% of Limpopo's water infrastructure having medium to high refurbishment needs. More than 2500 households are affected by water infrastructure functionality challenges, mostly in rural communities across the central and eastern parts of the province. In terms of water quality, four water services authorities face a high Blue Drop risk rating (Capricorn, Mogalakwena, Modimolle and Thabazimbi). In terms of sanitation, all water services authorities in the province face a "poor" or "critical state" Green Drop risk rating. Only the Vhembe district improved on their Green Drop score (from 12% in 2013 to 24% in 2021). The remaining water services authorities relapsed to lower Green Drop scores compared to 2013 baselines. The most prominent risks were observed at a treatment level, and pointed to works that exceeded their design capacity, dysfunctional processes (especially disinfection) and equipment, a lack of flow measurement, as well as effluent and sludge non-compliance. The inadequate sanitation provision not only negatively affects communities and businesses, it also poses a further threat to the quality of scarce water resources in Limpopo.

#### Electricity

Eskom is the main supplier of electricity to households in Limpopo: Eskom supplies 83.5% of households, while the local municipalities supply 16.3% of households. Household access to electricity is generally high, in the high 80% to high 90% of households in different areas. The three customer load networks in the province are all expected to experience a steady growth in demand of between 3.25 and 2.4% due to an increase in light and heavy industrial, commercial, residential and also mining and possibly smelting activities. To respond to increasing demand, various projects are being planned including the Medupi transmission integration (400 kV and 765 kV), Waterberg generation 400 kV stability enhancement, Nzhelele 400 kV integration, Strengthening of Limpopo East Corridor, the new Silimela substation and the new Sekhukhune substation. Alternative energy projects are being considered. The Department of Science and Innovation, in partnership with Anglo American, Bambili Energy and ENGIE, is looking into opportunities to transform the Bushveld complex and larger region around Johannesburg, Mogalakwena and Durban into a hydrogen valley. The selection of the corridor from Durban to Mogalakwena as a hydrogen corridor was based on existing hydrogen potential to switch many of the industrial, mobility and buildings activities to hydrogen fuel or feedstock. One of the three catalytic green hydrogen hubs are located in Mogalakwena.

#### Solid Waste

In terms of solid waste management, information on the capacity of landfill sites is not readily available. There are no hazardous waste disposal sites in the province; hazardous and medicinal waste is transported to disposal facilities in Gauteng.

#### **Online Connectivity**

In terms of online connectivity, 61.7% of households in Limpopo have access to the internet using a mobile device, indicating that mobile access to the

internet has made it much more accessible to households in rural areas. Only 1.5% of households gain access to the internet by means of internet cafes or education facilities in the province, both in the urban and rural areas. In response to this service gap, the Premier mandated the provision of ICT infrastructure to educational and health facilities through the State of the Province Address in February 2023. Broadband telecommunications infrastructure is currently being implemented in Limpopo. According to Limpopo Connexion, 50 sites have been connected to date. There are plans to further expand the network into all districts in the province, including fibre, microwave masts and broadband to enable 5G connectivity.

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Appendix A: GVA constant prices





# Appendix B: ESKOM network strengthening projects

Source: ESKOM Transmission Plan 2022-2031

TDP scheme	Project name	Expected CO year
Medupi Transmission Integration	Medupi-Ngwedi first 765 kV line (energised at 400 kV)     Medupi-Borutho 400 kV line	2022
Waterberg Generation	<ul> <li>Medupi-Witkop first 400 kV line</li> </ul>	2022
Enhancement	Borutho-Silimela first 400 kV line	2029
	Silimela 400/132 kV Substation	
Highveld North-West	<ul> <li>Manogeng 400 kV Switching Station</li> </ul>	2022
Reinforcement Phase 2	<ul> <li>Loop-in Duvha-Leseding 400 kV line into Manogeng Switching Station</li> </ul>	2023
	<ul> <li>Manogeng-Silimela 400 kV line</li> </ul>	
Highveld North-West and Lowveld North Reinforcement Phase 1	Emkhiweni-Silimela 400 kV line	2029
	<ul> <li>Sekhukhune 400/275/132 kV Substation (1 x 800 MVA 400/275 kV transformer and 2 x 500 MVA 400/132 kV transformers)</li> </ul>	
Sekhukhune Integration Phase 1	<ul> <li>Loop-in Arnot-Merensky 400 kV into Sekhukhune Substation</li> </ul>	2029
	<ul> <li>Manogeng-Sekhukhune first 400 kV line</li> </ul>	
	<ul> <li>Sekhukhune-Senakangwedi first 275 kV line</li> </ul>	
Sekhukhune Integration Phase 2	Witkop-Sekhukhune first 400 kV line	2031
	<ul> <li>Nzhelele 400/132 kV Substation (2 x 500 MVA 400/132 kV transformers)</li> </ul>	
Nzhelele 400 kV Integration	Tabor-Nzhelele 400 kV line	2030
	Borutho-Nzhelele first 400 kV line	
Foskor and Acomhoek 275/132 kV Transformation Upgrades	<ul> <li>Foskor-Merensky second 275 kV line (built at 400 kV specification)</li> </ul>	2027
Limpopo East Corridor	<ul> <li>Establishment of 400 kV busbars at Spencer Substation and Foskor Substation</li> </ul>	2029
	<ul> <li>Foskor first 400 MVA 400/275 kV transformer</li> </ul>	

TDP scheme	Project name	Expected CO year	
	<ul> <li>Spencer first 500 MVA 400/132 kV transformer</li> </ul>		
	<ul> <li>Foskor-Spencer first 400 kV line (110 km)</li> </ul>		
	<ul> <li>Merensky-Foskor second 275 kV line change-over to 400 kV line</li> </ul>		
Polokwane Reactive	Spencer 2 x 36 Mvar capacitor banks	2028	
Power Compensation	Tabor 2 x 36 Mvar capacitor banks	2020	
Warmbad Transformation Upgrade	<ul> <li>Warmbad first 250 MVA 275/132 kV transformer</li> </ul>	2026	
Leseding Transformation Upgrade	<ul> <li>Leseding third 500 MVA 400/132 kV transformer</li> </ul>	2026	
Acornhoek Transformation Upgrade	Acornhoek third 125 MVA 400/132 kV transformer	2026	
Borutho Transformation Upgrade	<ul> <li>Borutho third 500 MVA 400/132 kV transformer</li> </ul>	2026	

# Appendix C: Water balance per supply scheme area

Water scheme area	Developed 2021	Developed and potential 2021	No development 2023	Developed and potential 2023
		Volume	(MI/d)	
Aganang East GWS	1.252	2.268	1.057	2.073
Aganang LM Farms Supply	0.001	0.101	-0.006	0.094
Aganang North GWS	1.215	2.120	1.121	2.026
Alexandra Scheme	0.717	0.717	0.715	0.715
Alldays BS	-0.326	-0.207	-0.399	-0.280
Amandelbult Supply	-0.127	-0.077	-0.145	-0.095
Archibald GWS	0.767	1.067	0.704	1.004
Ashmole Dale WS	-0.004	0.121	-0.004	0.121
Avon GWS	0.495	1.276	0.215	0.996
Badimong RWS	1.120	8.459	0.921	8.260
Bakenberg RWS	0.374	7.483	-0.192	6.917
Bakone GWS	2.105	2.897	1.949	2.741
Baltimore Supply	-0.023	0.010	-0.034	-0.001
Bandelierkop Supply	0.011	2.305	0.004	2.298
Ba-Phalaborwa LM Farms Supply	-0.111	0.689	-0.388	0.412
BelaBela Individual Supply	-0.050	0.672	-0.058	0.664
Bela-Bela LM Farms Supply	0.102	0.702	0.027	0.627
BelaBela RWS	-6.488	-5.426	-7.151	-6.089
Bergnek GWS	-0.032	1.046	-0.041	1.037
Biesjeskraal WS	-0.012	0.049	-0.014	0.047
Blouberg LM Farms Supply	0.051	0.251	-0.021	0.179
Blouberg RWS	1.667	2.788	1.416	2.537
Blyde Local Sources	0.479	3.380	0.238	3.139
Boerboomskraal WS	-0.001	0.055	-0.002	0.054
Botlokwa GWS	1.111	11.258	0.542	10.689
Boyne RWS	-0.086	0.843	-0.337	0.592

Water scheme area	Developed 2021	Developed and potential 2021	No development 2023	Developed and potential 2023
		Volume	(MI/d)	
Buysdorp Scheme	0.074	0.192	0.054	0.172
Chuene Maja RWS	0.788	3.439	0.625	3.276
Daggakraal WS	0.013	1.867	0.012	1.866
Dalmeny Local WS	-0.001	0.064	-0.002	0.063
Damani RWS	1.879	9.672	0.915	8.708
De Hoop/Nebo Plateau/Annex WS	-0.236	-0.017	-0.252	-0.033
De Hoop/Nebo Plateau/Carbonatites/Spitskop WS	1.256	4.123	0.890	3.757
De Hoop/Nebo Plateau/De Hoop Dam WS	1.473	1.522	1.470	1.519
De Hoop/Nebo Plateau/Jane Furse/Glen Cowie WS	-5.975	7.648	-7.519	6.104
De Hoop/Nebo Plateau/Lepellane WS	0.258	2.899	-0.058	2.583
De Hoop/Nebo Plateau/Malekana WS	0.022	2.386	-0.313	2.051
De Hoop/Nebo Plateau/Mampuru WS	-0.456	3.319	-0.833	2.942
De Hoop/Nebo Plateau/Middle Ngwaritsi WS	0.189	1.742	0.050	1.603
De Hoop/Nebo Plateau/Monsterlus WS	-0.284	2.011	-0.478	1.817
De Hoop/Nebo Plateau/Ngwaritsi WS	-0.274	2.486	-0.654	2.106
De Hoop/Nebo Plateau/Nkadimeng WS	2.928	5.534	2.510	5.116
De Hoop/Nebo Plateau/Schoonoord WS	-0.042	2.415	-0.433	2.024
De Hoop/Nebo Plateau/Sephaku WS	-0.243	1.732	-0.464	1.511
De Hoop/Nebo Plateau/Zaaiplaas WS	1.175	6.179	0.833	5.837
Dwaalboom Supply	-0.053	-0.013	-0.061	-0.021
Eiland Supply	-0.351	-0.289	-0.426	-0.364
Elias Motsoaledi LM Farms Supply	0.993	1.843	0.540	1.390
Elias Motsoaledi/Lukau WS	6.594	7.851	5.286	6.543
Elim / Vleifontein RWS WS	-0.731	6.903	-1.761	5.873
Fetakgomo LM Farms Supply	0.001	0.051	0.000	0.050
Flag Boshielo RWS/Eastern2 WS	0.001	0.640	-0.070	0.569
Flag Boshielo RWS/Eastern3 WS	0.527	2.035	0.163	1.671
Flag Boshielo RWS/Flag Boshilo Central WS	-1.185	3.481	-1.835	2.831
Flag Boshielo RWS/West WS	2.575	5.172	1.908	4.505
Ga Hlako RWS	2.356	3.443	2.024	3.111

Water scheme area	Developed 2021	Developed and potential 2021	No development 2023	Developed and potential 2023
		Volume	(MI/d)	
Ga Mokobodi GWS	1.130	2.033	0.971	1.874
Ga Rawesi GWS	1.409	2.186	1.322	2.099
Ga-Pahladira RWS	-0.039	0.012	-0.067	-0.016
Ga-Seleka RWS	2.112	3.446	1.933	3.267
Giyani System A/B WS	2.747	9.574	2.132	8.959
Giyani System C/D WS	-7.025	0.307	-8.700	-1.368
Giyani System D : South West WS	12.015	15.234	11.539	14.758
Giyani System F1 WS	1.595	4.082	1.294	3.781
Giyani System F2 WS	3.549	4.736	3.426	4.613
Glen Alpine RWS	-0.162	2.522	-0.373	2.311
Gorkum GWS	2.029	2.171	1.931	2.073
Gravelotte Local WS	-0.446	0.034	-0.530	-0.050
Greater Giyani LM Farms Supply	-0.004	0.437	-0.013	0.428
Greater Letaba LM Farms Supply	-0.019	0.481	-0.106	0.394
Greater Tzaneen LM Farms Supply	-0.346	0.854	-1.086	0.114
Groothoek RWS	11.468	17.364	8.687	14.583
Haenertsburg Individual Supply	6.449	7.140	6.411	7.102
Hoedspruit / Kampersrus WS	-1.390	0.283	-1.519	0.154
Houtrivier RWS - CDM	0.330	0.835	0.271	0.776
Houtrivier RWS - PIkLM	0.451	1.140	0.346	1.035
Kromdraai Plots Supply	-0.174	-0.124	-0.189	-0.139
Kwandebele/Renosterkop/Elias Motsoaledi WS	9.264	12.583	8.311	11.630
Kwandebele/Renosterkop/Marble Hall WS	-2.779	2.778	-3.136	2.421
Laaste Hoop RWS	0.183	1.412	0.135	1.364
Laersdrift WS	-0.136	-0.047	-0.154	-0.065
Lambani RWS	0.460	1.366	0.368	1.274
Lebalelo Central WS	4.336	11.362	3.669	10.695
Lebalelo North WS	2.316	6.129	1.924	5.737
Lebalelo South WS	-0.675	3.961	-1.215	3.421
Leeupoort Supply	-0.450	-0.180	-0.514	-0.244

Water scheme area	Developed 2021	Developed and potential 2021	No development 2023	Developed and potential 2023
		Volume	(MI/d)	
Leolo Local Sources WS	-0.002	0.933	-0.050	0.885
Lepelle-Nkumpi LM Farms Supply	0.001	0.251	-0.040	0.210
Lephalale LM Farms Supply	0.335	0.968	-0.097	0.536
Lephalale Urban RWS	2.370	4.802	1.314	3.746
Letaba Individual Supply	-0.077	0.046	-0.089	0.034
Levubu CBD WS	-0.055	0.356	-0.152	0.259
Leydsdorp Local WS	-0.568	0.047	-0.623	-0.008
Lower Molototsi RWS	0.233	1.174	0.064	1.005
Lower Steelpoort Tubatse WS/Mooihoek/Tubatse	-4.997	14.717	-7.218	12.496
Lower Steelpoort Tubatse WSS/Praktiseer	0.122	8.054	-0.711	7.221
Lower Steelpoort Tubatse WSS/Steelpoort Town	-0.629	-0.360	-0.857	-0.588
Lower Steelpoort Tubatse WSS/Tubatse East	-0.344	0.318	-0.509	0.153
Lower Steelpoort Tubatse WSS/Tubatse North	0.494	1.761	0.403	1.670
Luphephe / Nwandedzi North RWS	0.932	1.197	0.750	1.015
Luphephe / Nwanedzi Main RWS	2.157	2.877	1.951	2.671
Maasstroom Supply	-0.101	2.775	-0.123	2.753
Mabaleng RWS	-0.185	1.288	-0.208	1.265
Mabatlane RWS	-1.545	1.277	-1.711	1.111
Mafefe Individual GWS	1.872	5.329	1.753	5.210
Makapans Valley Supply	-0.027	0.686	-0.031	0.682
Makgalong A & B GWS	0.103	0.249	0.099	0.245
Makhado Air Force Base Supply	-1.044	0.276	-1.328	-0.008
Makhado LM Farms Supply	-0.728	-0.628	-0.999	-0.899
Makhado RWS	-5.200	-0.959	-7.045	-2.804
Makhuduthamaga LM Farms Supply	-0.007	0.403	-0.019	0.391
Malamulele West RWS	0.201	3.154	-0.487	2.466
Mametja Sekororo RWS	7.629	11.901	6.549	10.821
Mankweng RWS	-3.404	2.044	-4.181	1.267
Mapela RWS	-14.028	-11.771	-17.694	-15.437
Mapuve / System N RWS	0.119	1.248	-0.035	1.094

Water scheme area	Developed 2021	Developed and potential 2021	No development 2023	Developed and potential 2023
		Volume	(MI/d)	
Marble Hall LM Farms Supply	-0.295	0.455	-0.404	0.346
Marble Hall WS	4.890	4.890	4.856	4.856
Marken Supply	-0.047	0.166	-0.050	0.163
Marnitz Supply	0.011	0.120	0.009	0.118
Maruleng Individual Supply	0.104	0.158	0.099	0.153
Maruleng LM Farms Supply	-0.329	0.471	-0.448	0.352
Masisi RWS	1.606	1.962	1.475	1.831
Mathabatha Individual GWS	0.574	1.431	0.460	1.317
Matshavhawe / Kunda RWS	0.006	0.168	-0.017	0.145
Middeldrift Supply	-0.251	-0.201	-0.275	-0.225
Middle Letaba RWS : Babangu	6.177	9.719	5.598	9.140
Middle Letaba RWS : Bolobedu NW	5.368	6.585	5.070	6.287
Middle Letaba RWS : Magoro	3.011	4.837	2.273	4.099
Middle Letaba RWS : Majosi	1.528	5.233	0.488	4.193
Middle Letaba RWS : Malamulele West	0.373	0.798	0.196	0.621
Middle Letaba RWS : Vyeboom Masia	0.633	6.523	0.303	6.193
Military Base Supply	-0.051	0.248	-0.053	0.246
Mmaletswai RWS	2.936	3.736	2.810	3.610
Modimolle LM Farms Supply	-0.046	0.074	-0.110	0.010
Modimolle Urban RWS	-3.640	-2.520	-4.378	-3.258
Modjadji RWS	5.877	8.100	4.886	7.109
Mogalakwena LM Farms Supply	-0.054	0.174	-0.121	0.107
Mogwadi / Wurthsdorp GWS	1.974	7.204	1.561	6.791
Mokopane RWS	-1.150	-1.150	-2.791	-2.791
Molemole LM Farms Supply	-0.033	0.317	-0.214	0.136
Molemole West Individual GWS	6.661	8.814	6.607	8.760
Molepo RWS	0.558	1.935	0.409	1.786
Moletje East GWS	0.405	1.232	0.193	1.020
Moletje North GWS	1.033	1.221	1.008	1.196
Moletje South GWS - CDM	1.565	3.135	1.401	2.971

Water scheme area	Developed 2021	Developed and potential 2021	No development 2023	Developed and potential 2023
		Volume	(MI/d)	
Moletje South GWS - PIkLM	0.764	1.453	0.706	1.395
Mookgophong LM Farms Supply	-0.068	0.252	-0.349	-0.029
Mookgophong RWS	0.153	0.153	-0.327	-0.327
Mopane Supply	-0.051	0.063	-0.057	0.057
Mothapo RWS	0.500	1.377	0.345	1.222
Mphahlele RWS	-5.649	-2.207	-6.894	-3.452
Murchison WS	0.650	1.146	0.644	1.140
Musina LM Farms Supply	0.455	0.805	0.248	0.598
Musina RWS	0.343	14.499	-1.324	12.832
Mutale LM Farms Supply	-0.008	-0.008	-0.010	-0.010
Mutale Main RWS	7.789	11.620	6.836	10.667
Mutale Mukuya RWS	-0.707	0.655	-1.095	0.267
Namakgale / Lulekani RWS	38.910	42.771	35.216	39.077
North Malamulele East RWS	8.859	11.189	7.944	10.274
Northam RWS	0.989	1.239	0.682	0.932
Nthabiseng GWS	0.028	2.042	-0.033	1.981
Nzhelele North RWS	0.834	5.319	0.683	5.168
Nzhelele RWS	2.371	5.653	0.125	3.407
Olifantspoort South Group 2 WS	8.218	9.955	7.687	9.424
Olifantspoort South Group 3 WS	3.938	6.261	3.571	5.894
Olifants-Sand RWS	-36.893	-35.071	-45.374	-43.552
Orighstad WS	-0.247	0.185	-0.289	0.143
Penge Local Sources WS	0.491	1.360	0.417	1.286
Pienaarsrivier RWS	0.155	0.865	0.115	0.825
Piet Gouws/Masemola WS	-0.047	1.762	-0.396	1.413
Piet Gouws/Veeplaas WS	0.467	0.775	0.438	0.746
Polokwane LM Farms Supply	0.380	0.530	0.254	0.404
Prieska Supply	0.036	0.093	0.027	0.084
Ramakgopa GWS	0.746	4.191	0.494	3.939
Raphuti Supply	-0.044	-0.019	-0.047	-0.022

Water scheme area	Developed 2021	Developed and potential 2021	No development 2023	Developed and potential 2023
	Volume (MI/d)			
Rapotokwane Supply WS	0.021	1.392	-0.005	1.366
Rebone RWS	-0.185	3.198	-0.482	2.901
Rietbokvalley Supply	-0.018	0.851	-0.019	0.850
Rietgat GWS	-0.016	0.023	-0.017	0.022
Ritavi / Letaba RWS	3.723	6.025	2.457	4.759
Ritavi II RWS	-4.607	-2.465	-7.185	-5.043
Roedtan/Thusang Supply	-0.663	-0.232	-0.926	-0.495
Rooiberg Supply	-0.148	-0.068	-0.165	-0.085
Roossenekal WS	0.067	0.120	-0.003	0.050
Rubbervale Supply	-0.006	0.475	-0.007	0.474
Schoongezicht WS	0.225	0.240	0.222	0.237
Sebayeng-Dikgale RWS	1.060	6.093	0.582	5.615
Segwasi RWS	-0.009	0.601	-0.019	0.591
Sekgopo Local GWS	-0.668	0.219	-0.960	-0.073
Sekgosese Individual Groundwater Scheme	1.473	1.785	1.248	1.560
Sentrum Supply	-0.010	-0.005	-0.012	-0.007
Senwabarwana GWS	0.642	2.174	0.380	1.912
Setaria Supply	-0.004	0.001	-0.004	0.001
Setuteng RWS	0.366	0.762	0.211	0.607
Siluwane - Nondweni Extended RWS	2.598	4.060	2.036	3.498
Silwermyn / Kirstenspruit GWS	0.325	1.738	0.179	1.592
Sinthumule / Kutama RWS	3.351	15.210	2.491	14.350
South Malamulele East RWS	12.938	18.437	11.149	16.648
Specon RWS	1.822	2.637	1.469	2.284
Swartklip Supply	-0.771	-0.571	-0.827	-0.627
Swartkop Supply	0.188	0.445	-0.056	0.201
Taaiboschgroet GWS	3.609	8.164	3.062	7.617
Thabazimbi LM Farms Supply	-0.345	0.005	-0.543	-0.193
Thabazimbi RWS	0.932	1.042	0.307	0.417
Thabina RWS	4.395	5.843	3.504	4.952
Water scheme area	Developed 2021	Developed and potential 2021	No development 2023	Developed and potential 2023
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	Volume (MI/d)			
Thalahane GWS	-0.104	0.279	-0.139	0.244
Thapane RWS	2.297	4.466	1.531	3.700
Thulamela LM Farms Supply	-0.002	0.048	-0.002	0.048
Tom Burke Supply	-0.003	0.106	-0.005	0.104
Tours RWS	3.476	5.429	2.708	4.661
Tshakhuma RWS	2.811	3.272	2.181	2.642
Tshifire Murunwa RWS	1.069	1.577	0.858	1.366
Tshifudi RWS	2.846	3.933	2.479	3.566
Tshikondeni Mine Supply	-0.224	0.009	-0.230	0.003
Tshipise Supply	0.030	0.060	-0.012	0.018
Tshitale RWS	0.306	6.979	-0.013	6.660
Tubatse LM Farms Supply	-0.004	0.646	-0.192	0.458
Tzaneen / Modjadjiskloof WS	-6.844	-6.360	-7.782	-7.298
Uitspan Supply	-0.025	0.373	-0.033	0.365
Valdezia RWS	0.675	2.261	0.545	2.131
Venetia Mine Supply	0.000	0.000	0.000	0.000
Vingerkraal WS	-0.017	-0.017	-0.023	-0.023
Vivo Supply	-0.110	-0.068	-0.131	-0.089
Vondo Central RWS	24.446	28.451	17.886	21.891
Vondo East RWS	0.624	1.435	0.415	1.226
Vondo North Rural RWS	-0.028	0.409	-0.082	0.355
Vondo South RWS	-0.358	2.930	-0.845	2.443
Waterpoort Supply	0.012	0.061	0.009	0.058
Weenen Supply	-0.010	0.292	-0.012	0.290
Witpoort RWS	0.709	2.111	0.582	1.984
Worcester / Mothobeki RWS	0.284	1.719	0.070	1.505
Zoetfontein Supply	0.144	0.171	0.144	0.171
Zwartwater Supply	-0.120	1.942	-0.143	1.919
Total Source Balance	184.224	609.157	86.891	511.824