Analysing the impact of load-shedding provincially and locally

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Opening thought

- “About half of a city’s energy bill is lighting. For them, seeing the opportunities with LEDs where they can reduce their energy bill by half – or even up to 70% – quite often means they can spend the money elsewhere or they can reduce public budget deficits.”

Harry Verhaar – Phillips

- “Energy is necessary for economic growth, for a better quality of life, and for human progress.

Mac Thornberry – U.S Congress

Introduction

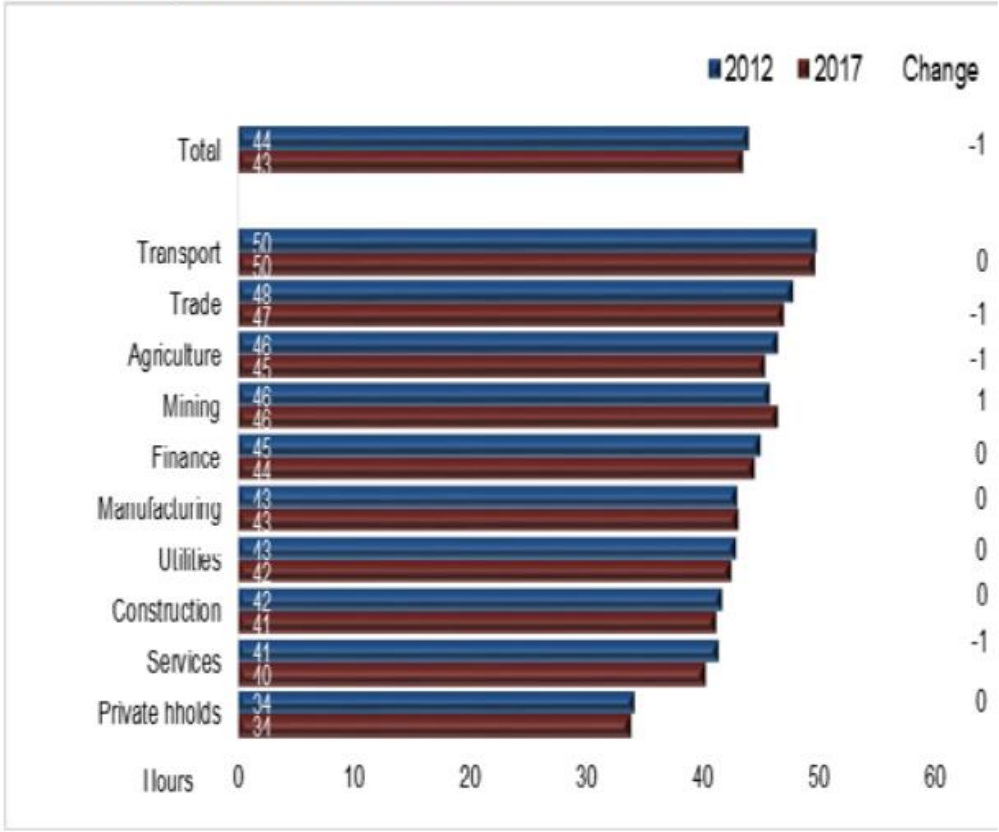
- Load-shedding is a term and that everyone in South Africa is familiar with and which is not very popular, but despite the society's views on load-shedding the fact remains that besides just the discomfort load-shedding has economic cost.

- South Africa has experienced load shedding for the past 11 years, which indicates a systemic issue with the national grid as well as a lack of crisis management.

Data Sources

- Stats SA – Labour Market Dynamics
- IHS Markit – GDP and Remuneration Data

Figure 4.11: Average weekly hours worked by industry, 2012 and 2017



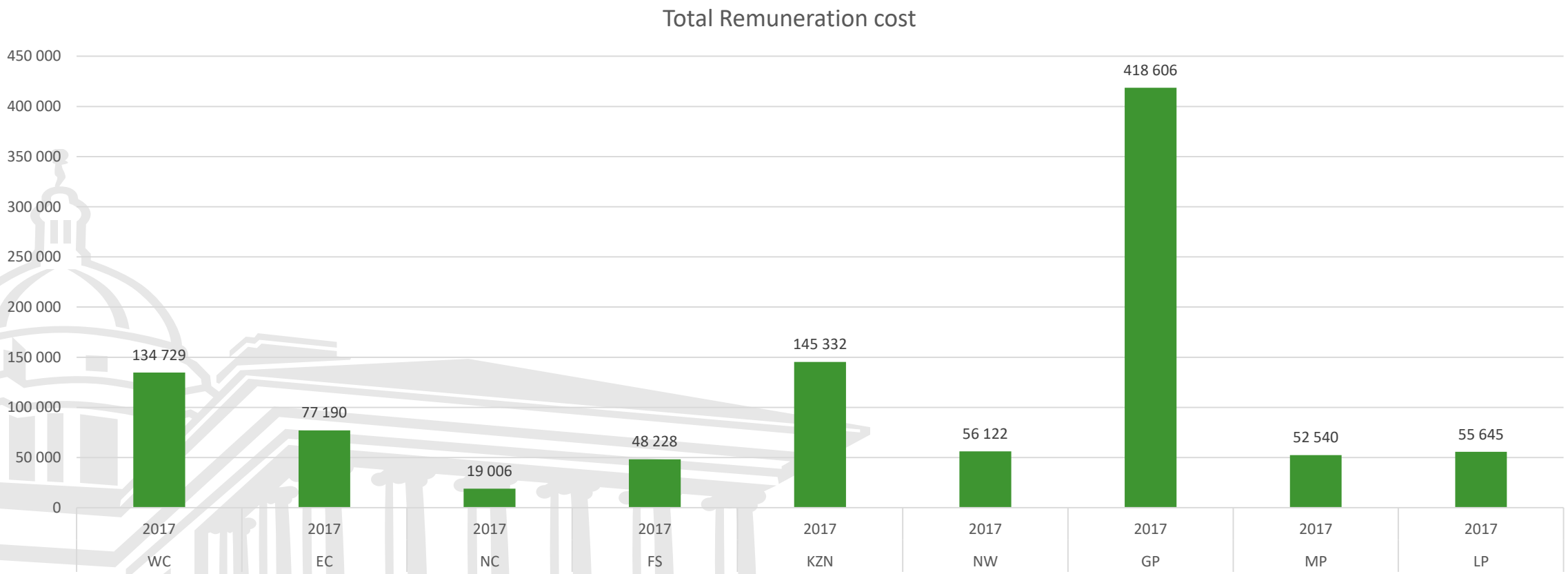
Methodology

- Loadshedding usually lasts for 2 hours or more and as such the measurement of GDP per hour worked was identified as the appropriate metric to use.
- $$\boldsymbol{GDP\ per\ hour} = \frac{Real\ GDP\ for\ the\ reference\ period}{The\ number\ of\ hours\ worked\ for\ the\ reference\ period}$$
- Labour remuneration per hour is calculated in a similar manner but is first adjusted to reflect real remuneration instead of nominal.

- Weekly hours were utilised to obtain annual total hours worked
- In this study no assumptions or any impacts regarding mitigations are included as there is no accurate data to factor this in and would be an arbitrary guess.

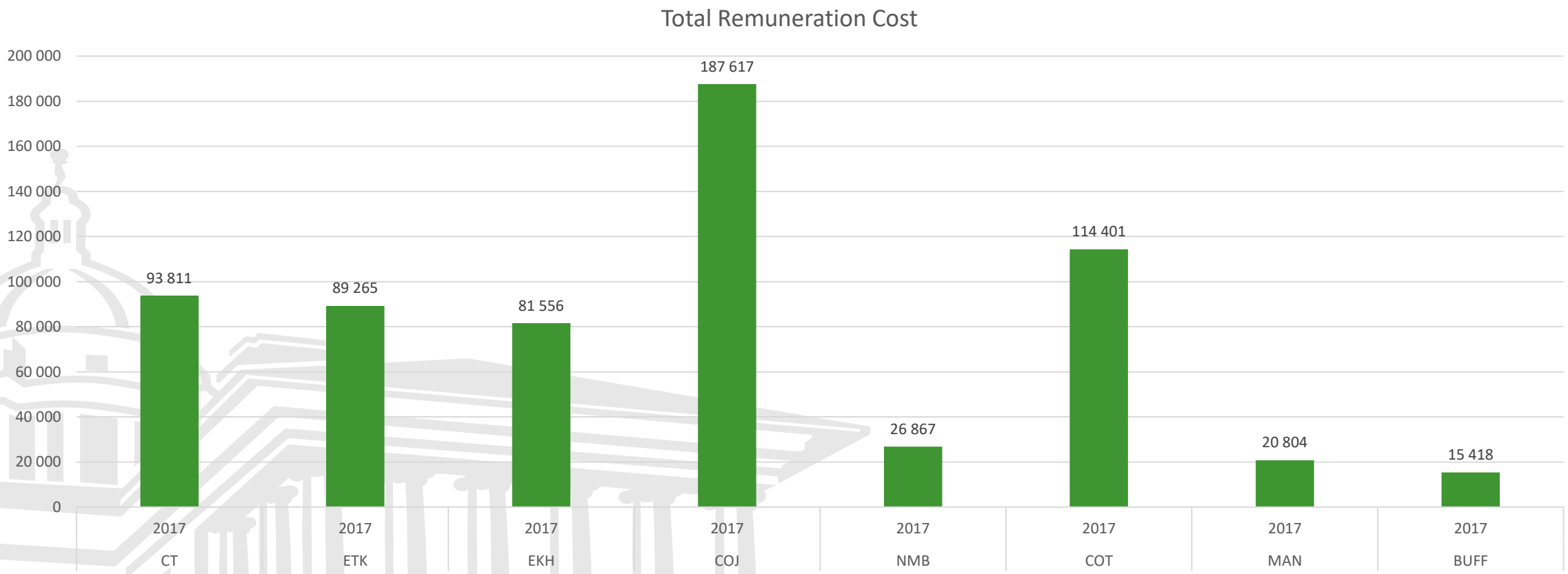
Results Labour remuneration

- Real Remuneration R’000



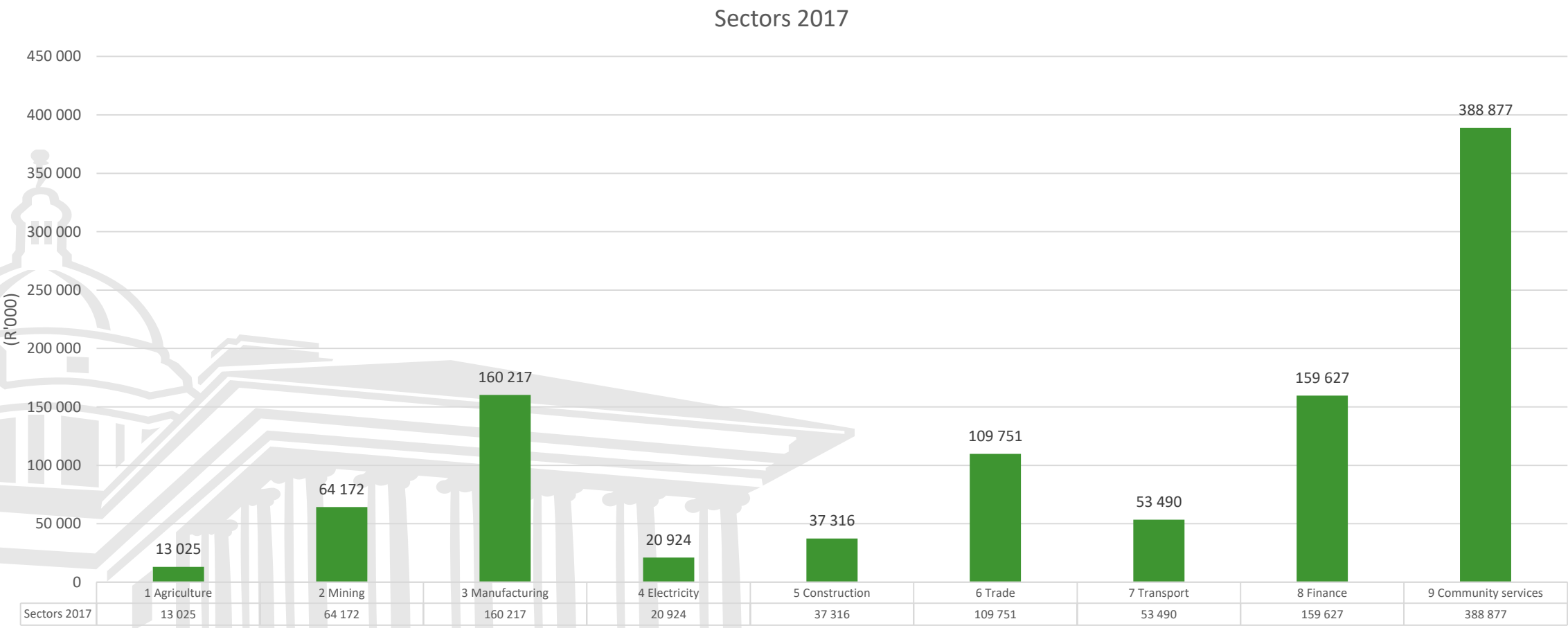
Results Labour remuneration

- Real Remuneration R’000



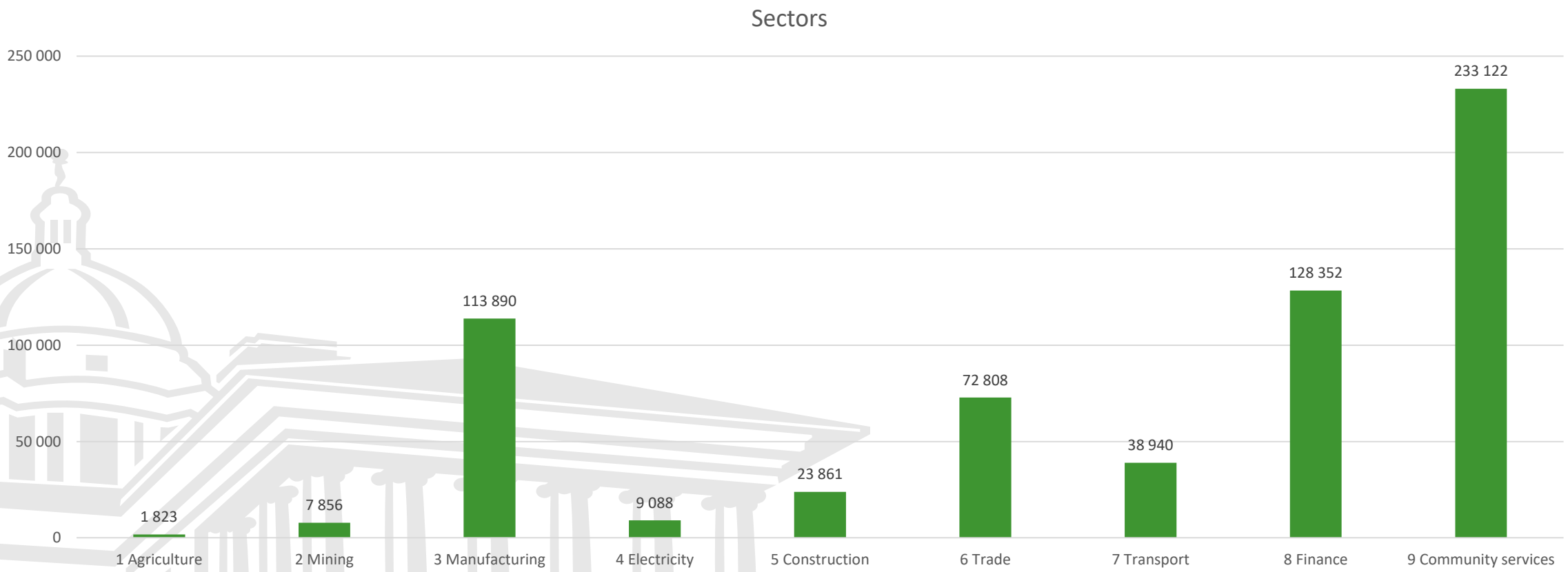
Labour Remuneration Sectors

- Provinces (R’000)



Labour Remuneration Sectors

- Metros (R’000)



Impact Ranks Labour Remuneration

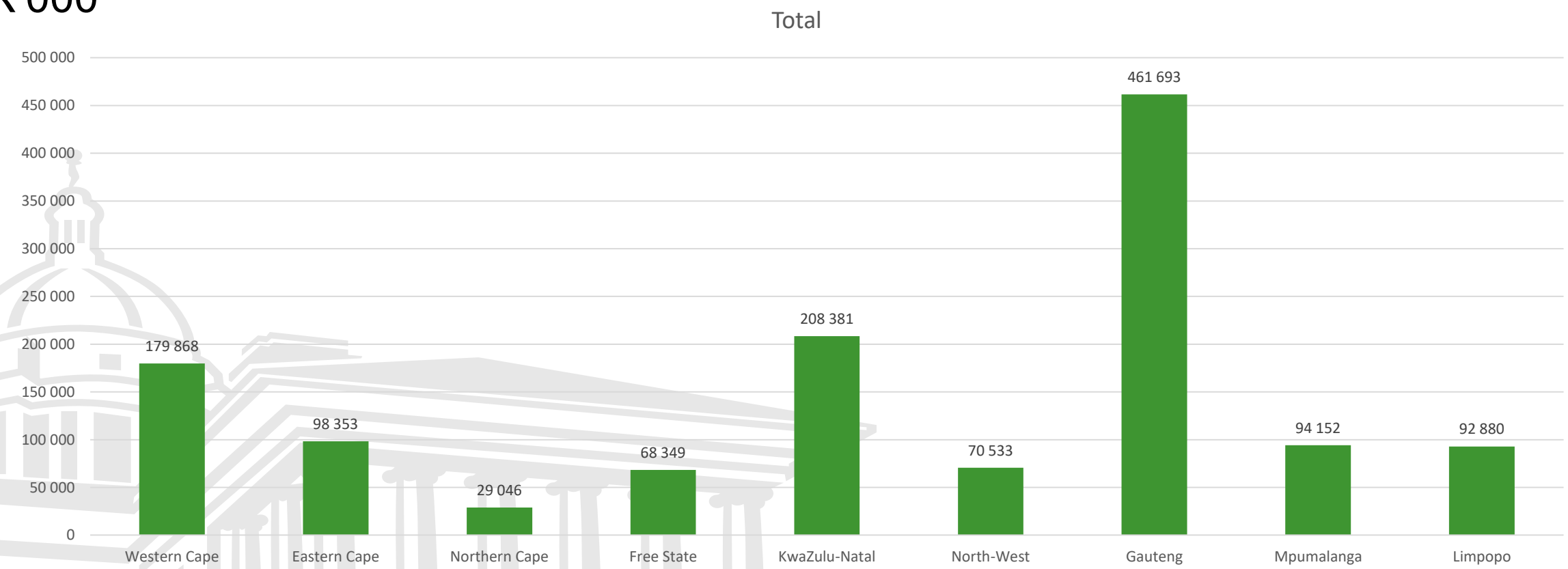
	WC	EC	NC	FS	KZN	NW	GP	MP	LP
	2017	**2017**	**2017**	**2017**	**2017**	**2017**	**2017**	**2017**	**2017**
1 Agriculture	1	6	7	4	2	9	8	3	5
2 Mining	8	9	6	5	7	1	3	4	2
3 Manufacturing	3	4	9	6	2	7	1	5	8
4 Electricity	3	7	8	4	6	9	1	2	5
5 Construction	2	4	9	5	3	7	1	6	8
6 Trade	2	4	9	5	3	7	1	6	8
7 Transport	3	4	7	5	2	6	1	8	9
8 Finance	2	4	9	6	3	5	1	7	8
9 Community services	3	4	9	7	2	6	1	8	5

Impact Ranks Labour Remuneration

	CT	ETK	EKU	COJ	NMB	COT	MAN	BUFF
	2017	2017	2017	2017	2017	2017	2017	2017
1 Agriculture	1	2	6	4	7	3	5	8
2 Mining	6	5	2	1	7	3	4	8
3 Manufacturing	4	2	3	1	6	5	8	7
4 Electricity	2	5	3	1	8	6	4	7
5 Construction	3	4	5	1	6	2	8	7
6 Trade	2	3	4	1	6	5	7	8
7 Transport	4	3	2	1	6	5	7	8
8 Finance	3	4	5	1	7	2	6	8
9 Community services	4	3	5	1	7	2	6	8

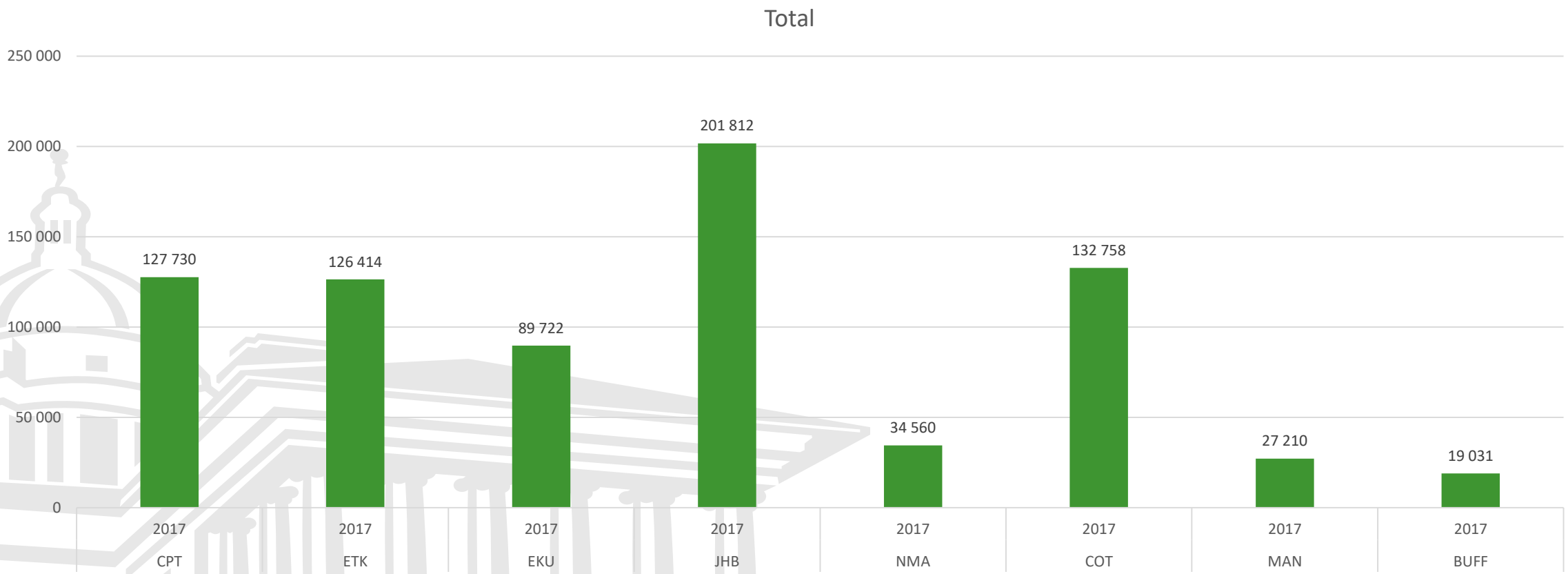
GDP Loss

- R’000



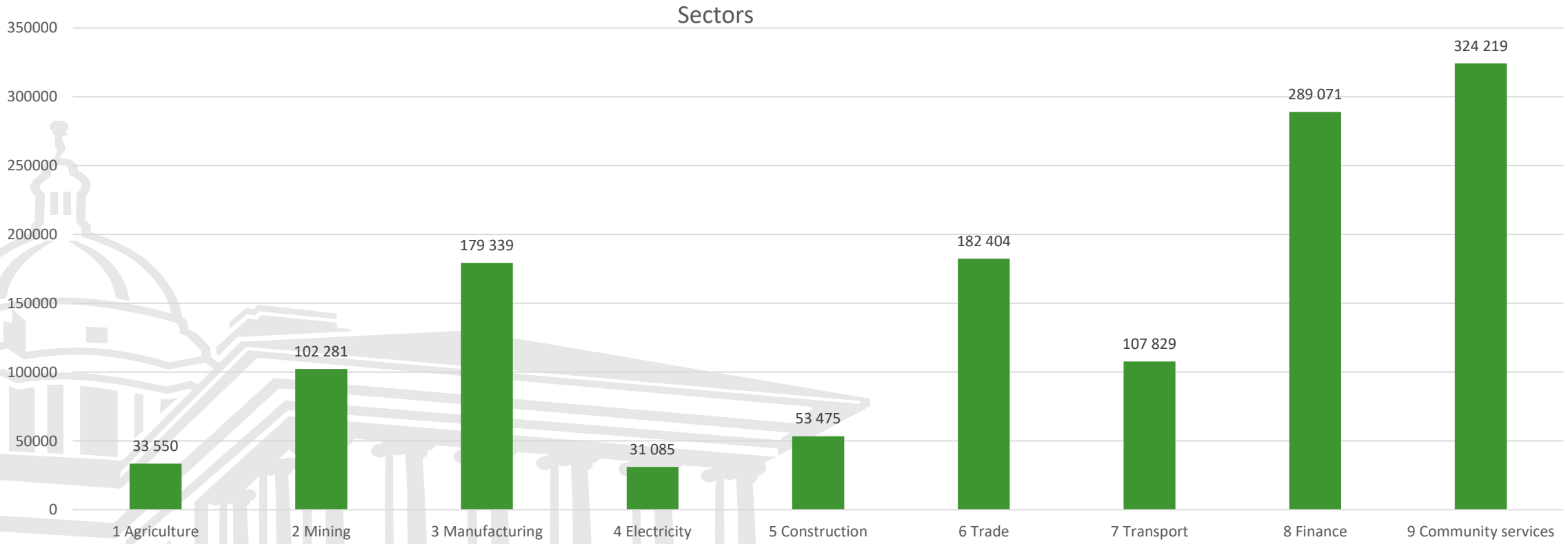
GDP Loss

- R’000



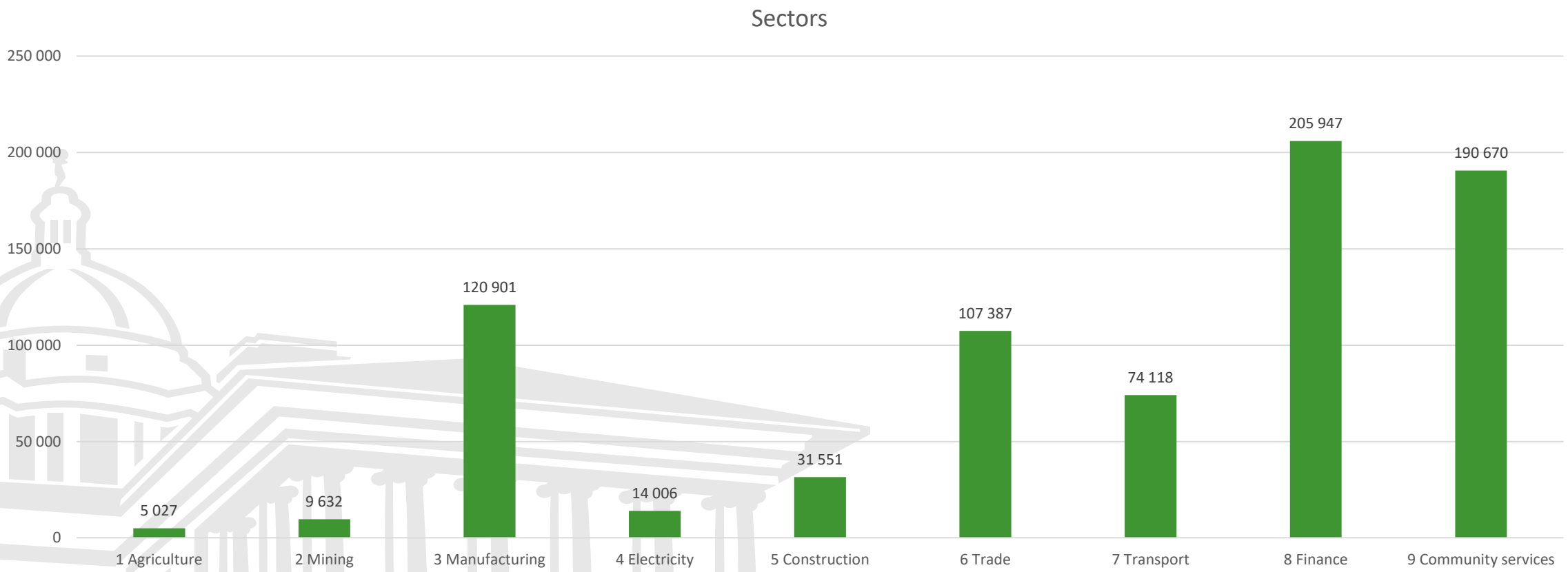
GDP Loss

- Provinces R’000



GDP Loss

- Metros R'000



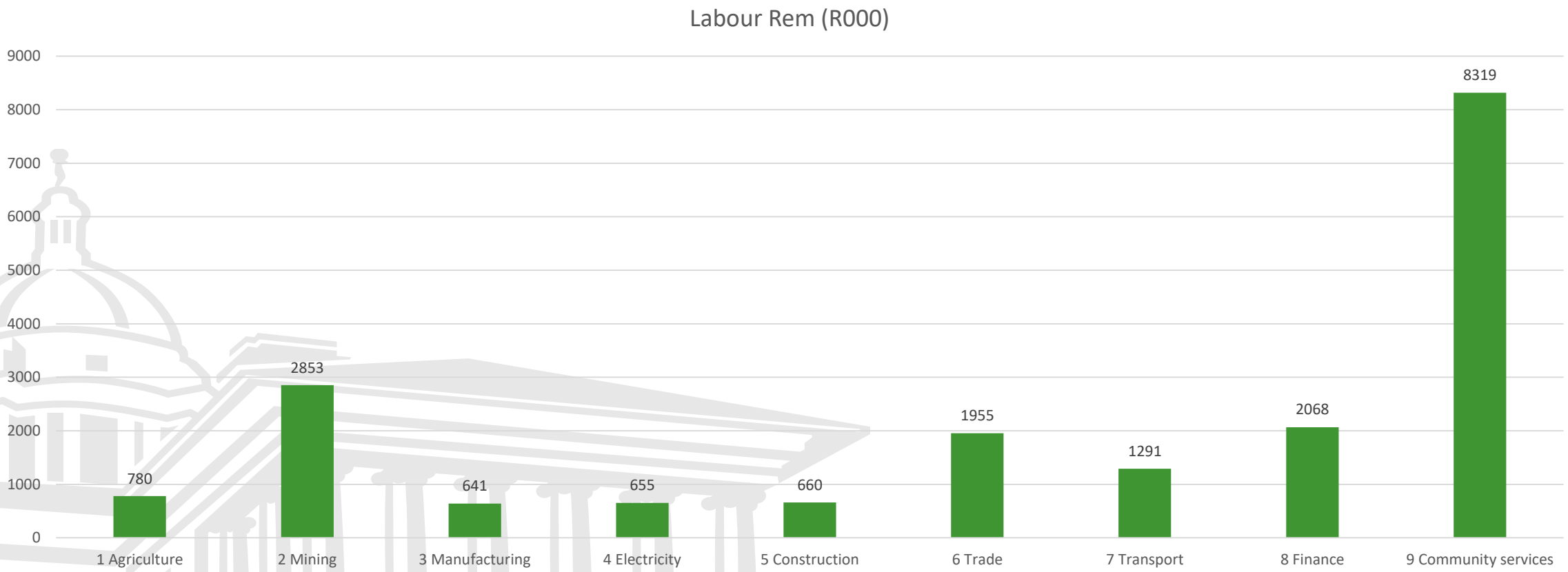
Impact Ranks GDP Ranks

	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North-West	Gauteng	Mpumalanga	Limpopo
1 Agriculture	2	9	7	4	1	8	6	3	5
2 Mining	8	9	6	5	7	3	4	2	1
3 Manufacturing	3	4	9	6	2	7	1	5	8
4 Electricity	4	8	9	6	3	7	1	2	5
5 Construction	3	4	9	8	2	7	1	6	5
6 Trade	3	4	9	7	2	8	1	6	5
7 Transport	3	4	9	5	2	8	1	6	7
8 Finance	2	4	9	7	3	8	1	6	5
9 Community services	3	4	9	7	2	6	1	8	5

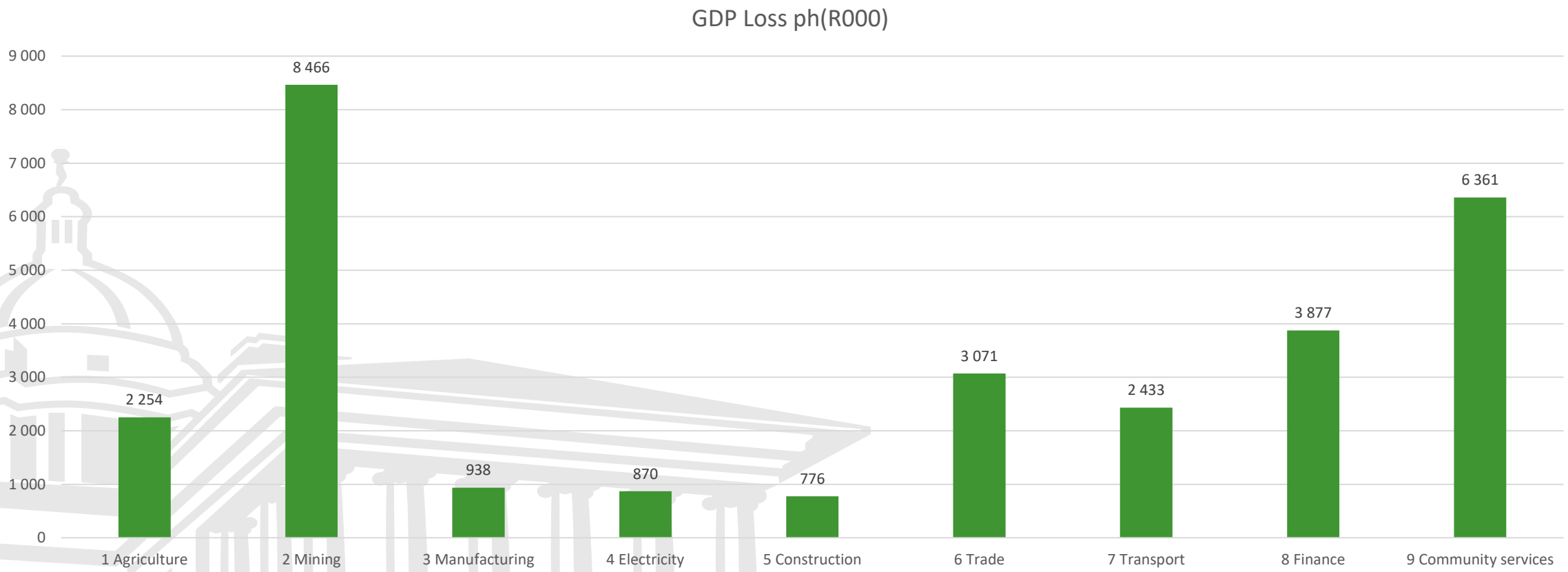
Impact Ranks GDP Ranks

	CPT	ETK	EKU	JHB	NMA	COT	MAN	BUFF
	2017	2017	2017	2017	2017	2017	2017	2017
1 Agriculture	2	1	6	4	8	3	5	7
2 Mining	6	4	3	1	7	2	5	8
3 Manufacturing	4	2	3	1	6	5	8	7
4 Electricity	5	2	4	1	8	3	6	7
5 Construction	4	2	5	1	6	3	7	8
6 Trade	3	2	5	1	7	4	6	8
7 Transport	4	2	5	1	6	3	7	8
8 Finance	2	4	5	1	6	3	7	8
9 Community services	4	3	5	1	7	2	6	8

Northern Cape



Northern Cape



Impacts and Scenario

- Every time there is load-shedding it costs the economy 0.05% of real GDP assuming as per norm a session is 2 hours

- Therefore it is not unreasonable to assume a scenario of 40 hours of load-shedding per annum.

- Now consider that we have been having loadshedding for the last 11 years…

Impacts and Scenario

				5 days		10 Days		20 Days	
	Real GDP (R'000)	Per hour	share of GDP	10 hours		20 hours		40 hours	
1 Agriculture	75 184 525	33 550	0,04%	335 495	0,4 %	670 991	1 %	1341982	2 %
2 Mining	234 305 185	102 281	0,04%	1 022 809	0,4 %	2 045 619	1 %	4091238	2 %
3 Manufacturing	384 036 122	179 339	0,05%	1 793 388	0,5 %	3 586 776	1 %	7173552	2 %
4 Electricity	65 017 773	31 085	0,05%	310 852	0,5 %	621 704	1 %	1243407	2 %
5 Construction	109 185 188	53 475	0,05%	534 750	0,5 %	1 069 499	1 %	2138999	2 %
6 Trade	426 935 439	182 404	0,04%	1 824 043	0,4 %	3 648 085	1 %	7296171	2 %
7 Transport	268 493 854	107 829	0,04%	1 078 289	0,4 %	2 156 577	1 %	4313154	2 %
8 Finance	633 412 947	289 071	0,05%	2 890 713	0,5 %	5 781 425	1 %	11562850	2 %
9 Community services	645 844 848	324 219	0,05%	3 242 193	0,5 %	6 484 386	1 %	12968772	2 %
	2 842 415 881	1 303 253	0,05%	13 032 531	0,5 %	26 065 063	1 %	52130125	2 %

- 40 hours of load shedding a year cost the South African economy a possible R 52 billion in output in 2017 alone
- Tshwane stands to lose approximately R5.3 billion in real GDP in 2017 alone

Conclusion

- Additional growth of between 1 to 2% in GDP if we just mitigate the risk of load-shedding

- It is safe to say that the inability to solve the energy crisis is hurting the economy and impacting the welfare of citizens and furthermore hampering the ability of business to develop and create new opportunities for job creation.

- In a low growth economy (practically stagnant) we need to ensure that we minimise these impacts as we truly can not afford it

CITY OF TSHWANE
IGNITING EXCELLENCE

Thank you!