CORPANS ECONOMY in the Eastern Cape and South Africa

A STATUS QUO AND BASELINE ASSESSMENT



























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Globally and nationally the Oceans Economy is taking on increasing importance in the policy and economic realm.

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1 EXECUTIVE SUMMARY

Globally and nationally the Ocean Economy is taking on increasing importance in the policy and economic realm as land based resources reach their extractive plateau, and the ocean is recognised as a resource. This resource, if responsibly managed, could provide a sustainable answer to many of the pressing issues facing humankind at present.

This baseline study establishes the potential of the Ocean Economy in South Africa at a national level, and in a provincial context for the Eastern Cape, using the Department of Environmental Affairs (DEA) 2014 Operation Phakisa for the Ocean Economy as the baseline framework and point of reference. A detailed analysis has been undertaken of the national and provincial economic trends, and thereafter a twenty-year economic forecast has been prepared which simulates the Ocean Economy and its various subsectors in the context of standard industrial classifications (SIC) for all economic sectors.

The purpose of the Eastern Cape Ocean Economy Baseline is to accurately formulate the current situation and understand the sector dynamics, take stock of the current and future ocean economy opportunities within a regional context, and be able to formulate a cogent 'Road Map' for the way forward linked to a demonstrable strategy. This required an in depth analysis of the work undertaken by the Operation Phakisa Laboratories, extensive engagement with national and regional stakeholders, public and private entities as well as academia, and the compilation of a baseline of implementable ocean based projects.

The process undertaken in the formulation of this baseline is detailed in this report and its appendix, with a high level listing of all of the projects considered hereafter. Certain of these are described in more detail in the report. A succinct summary of these fifty-nine projects and their establishment values, contribution to Gross Domestic Product and potential to create employment opportunities is outlined in the following table:-

Eastern Cape Oceans Economy Priority Projects Per Sector	Total CAPEX Rm	Year 20 GDP - Rm	Year 20 Jobs / FTE	Year 20 Projects
New EC Ocean Projects - Totals	57,204	19,726	42,152	59
1. Marine Transport & Manufacturing	1,587	588	648	8
2. Offshore Oil & Gas	40,670	10,269	3,600	8
3. Aquaculture	1,687	5,378	30,344	9
4. Marine Protection & Governance	103	120	114	4
5. Small Harbour Development	2,602	1,203	1,161	12
6. Coastal & Marine Tourism	10,505	2,085	6,065	9
7. Skills Development	28	61	194	7
8. Research & Innovation	22	22	22	1
9. Other Ocean Economy	1	1	2	1

Table 1: Eastern Cape Ocean Economy Sector Potential Over Twenty Years

Source: NMU Eastern Cape Ocean Economy Assessment.



By year twenty in 2038 this represents 140% of the anticipated Eastern Cape's ocean economy GDP, and 69% of the employment opportunities. This preliminary analysis indicates that more labour intensive projects need to be pursued, possibly at the expense of the capital intensive projects included.

Following on from this baseline study is a series of stakeholder engagement sessions to showcase the preliminary findings and start preparing the implementation plan in the form of a Road Map and strategy, to be presented at an investor's conference in September 2019.

2 AN OVERVIEW OF THE REPORT FINDINGS

This chapter provides a high level overview and summarises certain of the data and economic modelling which is undertaken in more detail in chapter 5 hereafter. Although this results in a certain amount of duplication, the intention is for this chapter together with the Executive Summary to form a stand-alone report which contains a synopsis of the report's findings.

The world depends on the ocean for trade, transport, energy, food, tourism, recreation and many other goods and services. At the same time, the ocean faces multiple challenges due to increasing pressure from human impact and unsustainable practices. The Ocean Economy in South Africa and the Eastern Cape has become a priority sector due to its potential to stimulate economic growth and address the triple challenges of inequality, poverty and unemployment.

This report analyses the potential of the ocean economy in South Africa at a national level and then in a provincial context for the Eastern Cape, using the Department of Environmental Affairs (DEA) 2014 Operation Phakisa for the Ocean Economy as the baseline framework and point of reference.

2.1 A DEFINITION OF THE OCEAN ECONOMY

For the purposes of this study the following definition of the Ocean Economy is used:

'the ocean sector (economy) is one that includes all economic activities closely linked to the ocean resources and environment and / or dependent to some meaningful degree on the ocean' (Hosking, 2017) [Our bold and italic highlights]

This definition has been accepted in the compilation of this report as the most appropriate for South Africa, and it is also deemed to be suitable for the Eastern Cape Ocean Economy.

2.2 THE SOUTH AFRICAN OCEAN ECONOMY - OPERATION PHAKISA IN 2014

Operation Phakisa is a project developed by the South African Government in 2014 with the potential to achieve "Big, Fast Results", with the aim of addressing the "triple threat" faced by South Africa in the form of inequality, poverty and unemployment. This project first highlighted four initial development sectors (marine transport and manufacturing [MTM], oil and gas [0&G], aquaculture, and marine protection and governance [MPG]), which were later expanded to six sectors (Walker, 2018. Quoting the Department of Environmental Affairs).

These sectors were:

- 1 Marine transport and manufacturing,
- 2 Offshore oil and gas exploration,
- 3 Aquaculture,
- 4 Marine protection services and ocean governance,
- 5 Small harbour development, and
- 6 Coastal and marine tourism.

In addition to the abovementioned sectors, two more cross-cutting sectors were identified as "enabling areas". These were:

- 7 Skills and capacity building, and
- 8 Research, technology and innovation.



A series of engagement sessions or 'Laboratories' were held between more than sixty private sector and state entities, and over 600 experts and individuals with bespoke knowledge in the Ocean Economy in order to draft an overview of the current status, and identified future potential of the sector over a twenty-year time frame. This required that the six sectors identified above be comprehensively conceptualised for the purposes of the laboratories, with the potential of the Ocean Economy being expressed over a twenty-three year timeframe for both Gross Domestic Product (GDP) and employment creation over a slightly different eight economic activities as expressed in the table below:

Table 2: Operation Phakisa - Initial Targets in 2014

Operation Phakisa	GDP Grov	wth (R'bn)	Job Crea	tion ('000)	
Ocean Sectors Considered	2010	2033	2010	2033	
Marine Transport & Manufacturing	16	42 - 61	15	40 - 56	
Tourism	15	25 - 35	90	150 - 225	
Offshore Oil & Gas	4	11 - 17	0.4	0.8 - 1.2	
Construction	8	20 - 21	162	390 - 407	
Renewable energy	0	14 - 17	0	0.9 - 1.1	
Fisheries & aquaculture	7	10 - 16	30	170 - 250	
Communication	4	7 - 10	19	32 - 52	
Desalination	0	0.1 - 0.1	0	1.6 - 1.6	
Total	54	129 - 177	316	788 - 1004	
Source: Department of Environmental Affairs	2014				

) epartment of Environmental Affairs, 20

The Operation Phakisa initiative is seen to focus on unlocking the potential of South Africa's ocean valued at a total ocean sectors economic contribution in GDP of R129 to R177 billion, and approximately one million jobs by 2033 (DEDEAT, 2014b; DEA, Operation Phakisa, 2014).

The ocean economy has contributed the following in terms of economic growth and job creation in the period between 2010 and 2015:

Table 3: Operation Phakisa:- Economic Growth and Job Creation - DEA.

	2010	2014	2015
Jobs	316 000	413 356	425 525
Economic growth (GDP contribution)	4.4% of GDP (R110 billion)	4.6% of GDP (R125 billion)	4.4% of GDP (R128 billion)

Source: Department of Environmental Affairs (DEA). 2019

The table above provides a representation of the economic growth and job creation resulting from the ocean economy up to 2015.



2.3 THE SOUTH AFRICAN OCEAN ECONOMY - RESTATED AT 2018

During 2013, academic Stephen Hosking undertook a review of the Ocean Economy in South Africa which resulted in both a definition of the Ocean Economy and a preliminary estimate of the contribution to Gross Domestic Product (GDP) for the Ocean Economy based to 2010. During 2017, Hosking undertook a further and similar study which updated his Ocean Economy definition to take cognisance of changed economic circumstances, and restated the Ocean Economy GDP with reference to the then more current 2015 data. This baseline data and the economic metrics have been used in conjunction with a twenty-year South African forecast for the major economic sectors in South Africa, based upon the internationally recognised Standard Industrial Classification (SIC) codes as used by the Department of Trade and Industry in South Africa. This has provided an analysis of the Operation Phakisa projections in the context of the current South African economy, together with a realistic projection of its future trajectory. The methodology and escalation factors used per economic sector are provided in appendix 12.3 hereafter.

This forecast and analysis in terms of the original Operation Phakisa framework has resulted in the following twenty year portrayal of the Ocean Economy in South Africa:

	National GDP - Direct	Year 0	Year 6	Year 10	Year 15	Year 20
	Sectors for Ocean Economy:-	2018	2024	2028	2033	2038
	Total Economy GDP - Rand Million	2,859,599	3,181,255	3,463,015	3,807,275	4,367,467
1	Marine Transport and Manufacturing	16,625	18,557	20,299	22,351	25,867
	- Marine Transport	8,802	9,961	10,995	12,258	14,559
	- Marine Manufacturing	7,823	8,596	9,305	10,093	11,308
2	Tourism	11,683	12,837	13,895	15,117	17,524
3	Offshore Oil & Gas	4,660	4,811	4,947	5,097	5,424
4	Construction	10,767	12,184	13,449	14,995	17,809
5	Renewable Energy	164	2,920	5,175	10,180	15,187
6	Fisheries and Aquaculture	3,708	4,327	4,805	5,465	6,244
7	Communication	3,917	4,433	4,893	5,456	6,480
8	Desalination	500	7,000	10,000	13,000	16,000
9	Other 'Ocean Economy'	4,000	6,500	10,000	20,000	30,000
	Operation Phakisa - Direct GDP:	56,023	73,570	87,464	111,661	140,534
	Operation Phakisa - Indirect & Other:	71,761	71,213	72,244	66,666	67,437
	Ocean Economy - Total GDP (SIC):	127,784	144,783	159,708	178,326	207,971
	- % of Total GDP in SA:	4.5%	4.6%	4.6%	4.7%	4.8%

Table 4: SA Ocean Economy GDP Forecast - Twenty Years

Source: Derek Zimmerman, based upon DEA Operation Phakisa, Quantec Data, 2019, & Stephen Hosking definition of the 'Ocean Economy', 2017.



The following observations based upon the table are worthy of noting:

- It is important to note that Operation Phakisa only investigated the nascent ocean economy sectors, or those that were not yet fully developed and had significant development potential,
- The current report's 2018 estimate for the total Ocean Economy GDP at R 127.78 billion versus the Hosking estimate of R 128.48 billion for the year 2015,
- The current report's direct Ocean Economy estimate for 2018, based upon the Hosking methodology of R 56.02 billion for the year 2018, with a differential of R 71.76 billion,
- The differential of R 71.76 billion has been investigated and considered in the context of the brief for the Operation Phakisa laboratories, and has been ascribed to 'indirect and induced GDP and Other Factors'. These 'Indirect and Other ' factors are considered to be both Ocean Economy sector and sub-sectors which were not considered in sufficient detail, and the economic effects of indirect and induced impact along the value chain which were not considered in detail.
- With these 'indirect and other' affects taken into consideration as per the current model above, all three modelling scenarios of Operation Phakisa, Hosking and the current report come into alignment in a satisfactory manner.
- Upon reaching year twenty of the current Ocean Economy forecast, for the year 2038 the total Ocean Economy GDP is forecast to be R 208 billion, versus the Operation Phakisa forecast of R 129 to 177 billion. This is a positive variance of R 31 billion, or 17.5 percent.
- The current forecast for the Ocean Economy indicates that it would comprise of 4.8% of the total South African economy in 2018, which is substantially similar to the ratio of 4.5% derived by Hosking in 2017.

The analysis of the employment data for the South African Ocean Economy has been based upon a similar methodology, with the Hosking metrics used to extrapolate the employment data as a direct relationship to the metrics used to calculate Gross Domestic Product in the preceding section.

	National Employment - Direct Jobs	Year 0	Year 6	Year 10	Year 15	Year 20
	Sectors for Ocean Economy:-	2018	2024	2028	2033	2038
	Total Economy - Jobs (FTE)	12,223,391	13,728,772	14,894,394	16,649,922	18,514,407
1	Marine Transport and Manufacturing	40,101	42,778	45,404	49,892	52,956
	- Marine Transport	15,550	16,589	17,607	19,202	20,381
	- Marine Manufacturing	24,550	26,190	27,797	30,690	32,575
2	Tourism	59,934	70,700	79,574	93,373	107,718
3	Offshore Oil & Gas	9,179	9,341	9,529	9,892	10,091
4	Construction	63,415	78,330	91,635	114,193	136,936
5	Renewable Energy	156	440	672	878	1,187
6	Fisheries and Aquaculture	42,211	47,072	50,952	56,809	62,536
7	Communication	6,921	7,383	7,836	8,546	9,071
8	Desalination	500	4,375	8,250	12,125	16,000
9	All Other (Non Ops. Phak.]	-	65,000	50,000	200,000	300,000
	Operation Phakisa - Direct Jobs	222,416	325,419	343,851	545,709	696,495
	Operation Phakisa - Indirect & Other Jobs	295,992	268,701	307,232	191,372	137,054
	Ocean Economy - Total Jobs (SIC):	518,408	594,120	651,083	737,081	833,549
	- % of Total Jobs in SA:	4.2%	4.3%	4.4%	4.4%	4.5%

Table 5: SA Ocean Economy Employment Forecast - Twenty Years

Source: Derek Zimmerman, based upon DEA Operation Phakisa, Quantec Data, 2019, & Stephen Hosking definition of the 'Ocean Economy', 2017.



The following observations based upon the employment table are worthy of noting:

- It is important to note that Operation Phakisa only investigated the nascent ocean economy sectors, or those that were not yet fully developed and had significant development potential,
- The current report's 2018 estimate for the total Ocean Economy formal employment 518,408 jobs versus the Hosking estimate of 425,524 for the year 2015,
- The current report's direct Ocean Economy estimate for 2018, based upon the Hosking methodology of R 222,416 jobs for the year 2018, with a differential of 295,992 jobs.
- On a similar basis to the GDP data above, the differential of 295,992 jobs has been investigated and considered in the context of the brief for the Operation Phakisa laboratories, and has been ascribed to 'indirect and induced employment' and other factors. These 'indirect and other' factors are considered to be both Ocean Economy sector and sub-sectors which were not considered in sufficient detail, and the economic effects of indirect and induced impact along the value chain, which were not considered.
- Upon reaching year twenty of the current Ocean Economy forecast, for the year 2038 the total Ocean Economy employment is forecast to be 833,549 jobs, versus the Operation Phakisa forecast of 788,000 to 1,004,000 jobs by the year 2033. This is variance of 62,451, or 6.96 percent, if we take the Operation Phakisa average to be 896,000 jobs.
- If the oft touted figure of 1,000,000 jobs for Operation Phakisa over twenty years is considered, then the differential is 166,451 jobs less, which is a more substantial understatement of 16.64 percentage points achieved in the current estimation.

Due to this relatively large variation in the formal sector employment for the different methodologies being used, it is suggested that further research be undertaken in this area.

Mr Stephen Hosking in his 2017 Ocean Economy paper has calculated that in order to realise GDP of R 177 billion by 2033 will require an average annual real growth rate of 1.82 percent, which he concludes is not overly ambitious. He has also calculated that in order to realise 1 million jobs by 2033 a real growth of 4.9 percent would be required per annum, and he states that this growth would be ambitious. (Hosking, 2017)



2.4 THE EASTERN CAPE OCEAN ECONOMY

The Eastern Cape Ocean Economy twenty-year forecast has been based upon the same methodology as applied for the South African economy, as described above, but based upon the economic data as relevant to the Eastern Cape for the base year of 2018, and as supplied by Quantec Data during the year 2019. The past ten years Quantec Data has been analysed in order to determine the trends for each economic sector, with certain sectors in decline and others ascending. The methodology and escalation factors used per economic sector are provided in appendix 12.3 hereafter.

It has been assumed that the same factors apply for the 'Indirect and Other' for total GDP and employment as was found to apply for the broader South African economy.

The general composition of the Eastern Cape economy is different to that of the South African economy, and this has resulted in a set of data which is substantially different in their totals and with a different internal composition due to the differences in the initial composition. The annual escalation factors for the Eastern Cape economic sectors are also different to those used for the South African economy, and are based upon the Eastern Cape economic growth trends over the past five years and the current expectations for the future. This forecast data is represented in the following table:

	Provincial GDP - Direct	Year 0	Year 6	Year 10	Year 15	Year 20
	Sectors for Ocean Economy:-	2018	2024	2028	2033	2038
	Total Economy GDP - Rand Million	214,384	231,385	246,108	263,827	298,702
1	Marine Transport and Manufacturing	1,204	1,291	1,365	1,452	1,612
	- Marine Transport	615	674	722	780	861
	- Marine Manufacturing	589	617	642	672	751
2	Tourism	1,133	1,209	1,283	1,362	1,541
3	Offshore Oil & Gas	13	13	13	13	13
4	Construction	819	916	1,011	1,113	1,306
5	Renewable Energy	6	6	6	6	7
6	Fisheries and Aquaculture	173	178	184	189	204
7	Communication	274	300	321	347	383
8	Desalination	38	525	750	975	1,200
9	Other 'Ocean Economy'	-	-	-	-	-
	Operation Phakisa - Direct GDP:	3,659	4,438	4,933	5,458	6,266
	Operation Phakisa - Indirect & Other:	5,901	6,050	6,369	6,827	7,863
	Operation Phakisa - Total GDP:	9,559	10,488	11,302	12,285	14,129
	- % of Total GDP in SA:	4.5%	4.5%	4.6%	4.7%	4.7%

Table 6: Eastern Cape Ocean Economy GDP Forecast - Twenty Years

Source: Derek Zimmerman, based upon DEA Operation Phakisa, Quantec Data, 2019, & Stephen Hosking definition of the 'Ocean Economy', 2017.

The following observations based upon the Eastern Cape GDP table are worthy of noting:

- The total Eastern Cape GDP for the year 2018 is R 214 billion which is 7.49 percent of the South African total economy GDP of R 2,859 billion.
- The total Eastern Cape Ocean Economy GDP for the year 2018 is R 9.56 billion which is 7.48 percent of the South African Ocean Economy GDP of R 127 billion.
- The total Eastern Cape Ocean Economy commences at 4.5 percent of the Eastern Cape general economy, and gradually grows to R 14.13 billion which represents 4.7 percent of the total Eastern Cape economy as forecast at R 298.70 billion.

This GDP data constitutes the baseline for the Eastern Cape Ocean Economy, both as the current situation in 2018 and as the anticipated growth and composition over the next twenty years to the year 2038. It is against this baseline that the current status of both the Operation Phakisa projects for the Eastern Cape have been evaluated further in this report, as well as the new and emerging projects at this point in time.

The same methodology has been applied to the employment data for the Eastern Cape, both in the context of the general economy and more specifically for the Ocean Economy as defined by the Operation Phakisa Laboratories working groups and ultimate synopsis.

The general composition of the Eastern Cape employment profile is different to that of the South African economy, and this has resulted in a set of data which is substantially different from the South African economy totals as the GDP was above, and with a different internal composition. This data is represented in the following table:

	Provincial Employment - Direct Jobs	Year 0	Year 6	Year 10	Year 15	Year 20
	Sectors for Ocean Economy:-	2018	2024	2028	2033	2038
	Total Economy - Jobs (FTE)	907,012	1,031,341	1,136,043	1,300,130	1,477,608
1	Marine Transport and Manufacturing	2,476	2,640	2,772	2,971	3,149
	- Marine Transport	884	995	1,078	1,190	1,313
	- Marine Manufacturing	1,592	1,645	1,695	1,781	1,835
2	Tourism	4,464	5,982	7,271	9,280	11,844
3	Offshore Oil & Gas	35	35	36	37	37
4	Construction	4,326	5,526	6,717	8,573	10,530
5	Renewable Energy	8	9	9	10	11
6	Fisheries and Aquaculture	3,689	4,175	4,608	5,342	5,956
7	Communication	393	443	480	529	585
8	Desalination	37	325	612	900	1,187
9	All Other (Non Ops. Phak.]	-	-	-	-	-
	Operation Phakisa - Direct Jobs	15,428	19,135	22,506	27,643	33,300
	Operation Phakisa - Indirect & Other Jobs	20,303	22,011	23,388	25,775	27,833
	Operation Phakisa - Total Jobs	35,731	41,145	45,894	53,418	61,133
	- % of Total Jobs in SA:	3.9%	4.0%	4.0%	4.1%	4.1%

Table 7: Eastern Cape Ocean Economy Employment Forecast - Twenty Years

Source: Derek Zimmerman, based upon DEA Operation Phakisa, Quantec Data, 2019, & Stephen Hosking definition of the 'Ocean Economy', 2017.



The following observations based upon the Eastern Cape employment table are worthy of noting:

- The total Eastern Cape formal employment for the year 2018 is 907,012 which is 7.42 percent of the South African total employment of 12,223,391 formal jobs.
- The total Eastern Cape Ocean Economy employment for the year 2018 is 35,731 which is 6.89 percent of the South African total Ocean Economy employment of 518,408 jobs.
- The total Eastern Cape Ocean Economy commences at 3.9 percent of the Eastern Cape general economy, and gradually grows to 61,133 jobs which represent 4.1 percent of the total Eastern Cape employment forecast of 1,477,608 jobs. These figures are slightly lower than the South African average of 4.2 percent for 2018 and 4.5 percent for 2038.

This employment data constitutes the baseline for the Eastern Cape Ocean Economy, both as the current situation in 2018 and as the anticipated growth and composition over the next twenty years to the year 2038. It is against this formal employment baseline that the current status of both the Operation Phakisa projects for the Eastern Cape have been evaluated further in this report, as well as the new and emerging projects at this point in time.



2.5 PROJECTS IDENTIFIED FOR THE EASTERN CAPE OCEAN ECONOMY

One of the objectives of this study is to establish what the expected Ocean Economy is for the Eastern Cape in the form of a baseline over a forecast period of twenty years, and with a clearly defined economic and employment profile across the various ocean sectors of activity, and then be able to measure actual performance and projects against this baseline. This has necessitated the establishment of the baseline as per the foregoing sections.

The final analysis for this report has been to ascertain what the Ocean Economy 'pipeline' of projects is within the Eastern Cape, in order to be able to determine whether these targets are realistic and able to be achieved with the projects being contemplated and implemented.

Due to the implementation of Operation Phakisa at both a national and provincial level, together with a growing awareness of the importance of the Ocean Economy in general, and for the Eastern Cape in particular, there is a substantial body of knowledge and awareness of projects for the ocean economy domain. A list of important and relevant Eastern Cape stakeholders has been compiled as per appendix 11 hereafter, and a series of meetings and focused engagements were facilitated and attended after a letter of introduction and proposed meeting agenda had been forwarded to each stakeholder. The letter of introduction is enclosed as appendix 11.2 hereafter. The stakeholder engagement process is still ongoing.

The stakeholder engagement process resulted in important information being collected and collated, certain of this in the form of a 'Project Bid Book' as per the examples in chapter 8 hereafter. These projects have been analysed at a high level and the project details incorporated into a project database which records the project details over a twenty year time frame to match the Eastern Cape Ocean Economy baseline, and currently has recorded fifty-nine projects within the eight Operation Phakisa economic sectors and enablers as follows:

Eastern Cape Oceans Economy	Total	Year 20	Year 20	Year 20		
Priority Projects Per Sector	CAPEX Rm	GDP - Rm	Jobs / FTE	Projects		
New EC Ocean Projects - Totals	57,204	19,726	42,152	59		
1. Marine Transport & Manufacturing	1,587	588	648	8		
2. Offshore Oil & Gas	40,670	10,269	3,600	8		
3. Aquaculture	1,687	5,378	30,344	9		
4. Marine Protection & Governance	103	120	114	4		
5. Small Harbour Development	2,602	1,203	1,161	12		
6. Coastal & Marine Tourism	10,505	2,085	6,065	9		
7. Skills Development	28	61	194	7		
8. Research & Innovation	22	22	22	1		
9. Other Ocean Economy	1	1	2	1		
New EC Ocean Projects - %	100.0%	100.0%	100.0%	100.0%		
1. Marine Transport & Manu.	2.77%	2.98%	1.54%	13.56%		
2. Offshore Oil & Gas	71.10%	52.06%	8.54%	13.56%		
3. Aquaculture	2.95%	27.26%	71.99%	15.25%		
4. Marine Protection & Govt.	0.18%	0.61%	0.27%	6.78%		
5. Small Harbour Development	4.55%	6.10%	2.76%	20.34%		
6. Coastal & Marine Tourism	18.36%	10.57%	14.39%	15.25%		
7. Skills Development	0.05%	0.31%	0.46%	11.86%		
8. Research & Innovation	0.04%	0.11%	0.05%	1.69%		
9. Other Ocean Economy	0.00%	0.01%	0.00%	1.69%		
Source: NMU Eastern Cape Ocean I	Economy Asse	essment.				

Table 8: Priority Projects Identified for the Eastern Cape Ocean Economy



The project details for each of these fifty-nine projects has been recorded and extrapolated over a twenty year timeframe, with project commencement dates, project capital expenditure values to implement, the commencement date for operations, the value of operations or benefits upon commencement, and the direct formal employment opportunities created from operations. This dataset for the eight economic sectors being considered has allowed a Gross Domestic Product and direct formal employment creation profile over the twenty-year timeframe to be formulated.

In order to relate this data back to the Eastern Cape Ocean Economy baseline which has been forecast as indicated earlier in this report, this set of data is juxtaposed against the baseline as per the following figures:



Figure 1: Eastern Cape Ocean Economy - GDP and Employment Projection

Source: Economic Model developed for the Eastern Cape Ocean Economy study, 2019.

This analysis provides a useful insight into the theoretical baseline which has been established as the 'Business As Usual' scenario and represented by the blue line in each instance above, and the summary of the more concrete and identifiable suite of projects which have been investigated for this study and collated into a dataset further in this report and represented by the red line above.

It is immediately apparent that the figure representing the Gross Domestic Product for the Eastern Cape Ocean Economy moves above the more traditional economic baseline as the high capital expenditure values are taken cognisance of in the earlier years, assuming that these projects are implemented in the foreseeable future, and then settles into a more steady pattern above the baseline as the operational production is realised in the form of GDP. Both of the project measures for GDP and employment have assumed a zero commencement position for the sake of these calculations, which is not reality, with a further study being required to establish this actual baseline.

From the employment data it can be seen that employment ramps up confidently to year ten as the projects are implemented and operations commences after construction is completed, with a slowing in growth thereafter. The employment growth for the suite of projects identified does not exceed the established baseline at any point. There are a range of possible reasons for this, with certain of these being that the projects being considered are too capital intensive and do not produce sufficient employment for capital expenditure; that the full employment value chains for indirect and induced employment have not been fully represented here; or that the forecast baseline has been incorrectly forecast at an excessive level.



2.6 ECONOMIC IMPACT ASSESSMENT OF PRIORITY PROJECTS

In order to quantify the impact of an intervention on the economy and society, an econometrical modelling exercise has been undertaken. Current and accepted economic multipliers and methodology have been used for this assessment. Economic impacts refer to the effects on the level of economic activity in a given area, as a result of some form of external intervention in the economy. The intervention can be in the form of new investment in, for example, technology, transport facilities, social development, housing, business development, etcetera.

It can furthermore also be in terms of changes in production processes or downscaling of activities. The economic effects may be viewed in terms of:

- Job Creation,
- Value added activities,
- · Personal income (including wages),
- · Business output (or sales volume),
- Wealth (including property values),
- Natural resource usage, increase or depletion in value,
- Externality values of proposed project, positive and negative, and
- Non-market valuations.

Any of these measures can be an indicator of improvement in the economic well-being of residents of communities that is usually a goal of investment or infrastructure projects. The net economic impact is usually viewed as the expansion or contraction of an area's economy, resulting from changes in (i.e., opening, closing, expansion or contraction of) a facility, project, program, or the whole industry.

The South African Industrial Development Corporation (IDC) undertakes a detailed analysis of the South African economy every five years and compiles a Social Accounting Matrix (SAM) for the economy with an emphasis on the first round, direct, indirect and induced impacts for Gross Domestic Product, and employment creation for each R 1 million of economic activity. A series of Input-Output multipliers are generated from this for South Africa and these are used to provide estimates of the economic impact of projects within the various economic sectors as per the Standard Industrial Classification (SIC). The IDC multipliers for the relevant Ocean Economy sectors have been applied to the economic output measured as 'Production' or 'Turnover', and the results recorded for all construction activities or capital expenditure as follows:

Table 9: Economic Impact Assessment along the Value Chain - Construction

Construction Activities - CAPEX - Total - To Year 20 (Rand M	Millio [Real value, 'Deflated' back - Jobs
--	--

Economic Activity & Employment	Direct	Indirect	Induced	Total
Production / Turnover	R 89,034	R 14,107	R 24,322	R 127,463
Gross Domestic Product (GDP)	R 57,204	R 15,946	R 27,494	R 100,644
Income (Wages & Profits)	R 17,161	R 4,784	R 8,248	R 30,193
Employment (Job Years)	64,509	21,425	40,040	125,975
Source: Derek 7immermen calculations (2010)		[IDC Sector Bu	ilding Construct	ion (35)]

Source: Derek Zimmerman calculations (2019) [IDC Sector: Building Construction (35)]



The data records that R 89 billion of direct capital expenditure results in a full value chain impact of R 127 billion, which translates into Gross Domestic Product of R 100 billion, creating 64,509 direct employment opportunities over the implementation phases, and a total of 125,975 formal jobs over the entire value chain. The income earned in the form of wages and profits and liable to taxation for the fiscus is R 30 billion along the entire value chain.

A similar methodology is applied in order to measure the more sustainable operational impact of these Eastern Cape Ocean Economy projects from year twenty once they are all implemented and stabilised. This data is indicated in the table below:

Table 10. Economic impact Assessment along the value chain - Operations	Table 10: Economic Im	pact Assessment along	g the Value Chain - (Operations
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Total Project Activities at Year 20 - <i>Excluding Construction Average</i> (Rand Millions).						
Economic Activity & Employment	Direct	Indirect	Induced	Total		
Production / Turnover	R 45,798	R 7,593	R 12,195	R 65,586		
Gross Domestic Product (GDP)	R 19,726	R 7,578	R 12,502	R 39,806		
Income (Wages & Profits)	R 8,883	R 3,526	R 5,875	R 18,285		
Employment (Job Years)	32,147	9,791	18,207	60,145		
Source: Derek Zimmerman calculations	(2019)	[IDC Sector: A b	lend of several s	sectorsl		

The data records that R 45.8 billion of direct project expenditure or operational income in year twenty results in a full value chain impact of R 65.6 billion, which translates into Gross Domestic Product of R 19.8 billion, creating 32,147 direct formal employment opportunities during year twenty, and a total of 60,145 jobs over the entire value chain in this year. The income earned in the form of wages and profits and liable to taxation for the fiscus is R 18.2 billion along the entire value chain.

The employment figures indicated above are lower than those calculated for the full fifty-nine projects, which has a total of 42,152 employment opportunities, of which 30,344 are for aquaculture, with the majority of these being in the labour intensive marine tilapia project.

2.7 CONCLUDING STATEMENT AND NEXT STEPS

Following on from this baseline study is a series of stakeholder engagement sessions to showcase the preliminary findings and start preparing the implementation plan in the form of a Project Bid Book, Road Map and strategy, to be presented at an investor's conference in September 2019.

This report also needs to identify a series of issues for further research.



3 STRUCTURE OF THIS REPORT

Due to the scale and complexity of the Ocean Economy in general, and the process of compiling a baseline economic assessment on both a national and provincial basis, this study is necessarily rather complex and has a range of primary studies being required in advance of analysing the provincial ocean economy. It has also been necessary to define the Ocean Economy in order to clearly delineate what it is being measured and evaluated.

For the analysis of the provincial ocean economy of the Eastern Cape it has been necessary to undertake a range of stakeholder engagements and assemble the data collected into a format which is comparable to both the higher order economy and more representative Ocean Economy framework, together with the Operation Phakisa study which looked at nascent or emerging ocean economy sectors as a subset of the full ocean economy. This has resulted in various economic models being used for both employment and Gross Domestic Product, at a national and provincial level, and after an analysis of the past decade, before a twenty-year projection of the full economy has been undertaken, with two subset economies being considered within this; being the defined ocean economy and the lesser Operation Phakisa ocean economy subset.

The report has also provided three tiers of information, with the first being a one page Executive Summary, the second being a nine page 'Overview of the report's findings, and the balance being an overview of the methodology adopted, economic outputs at a national and provincial level, the stakeholder engagement process and particulars of specific projects, with an extensive appendix being used to highlight certain of the founding literature and assumptions used in this work.

A high level overview of the report is as follows:

CHAPTER 1: EXECUTIVE SUMMARY

A concise one-page overview with a high-level summary of the report's findings.

CHAPTER 2: AN OVERVIEW OF THE REPORT'S FINDINGS

A nine page summary of the report's findings (preceding chapter) with reference to the South African economy, traditional ocean economy, by Standard Industrial Classification (SIC) category and Operation Phakisa ocean economy; followed by an overview of the Eastern Cape economy, traditional ocean economy (SIC) and Operation Phakisa ocean economy. The fifty-nine Eastern Cape ocean economy projects identified are placed in context with the baseline established, together with an economic impact assessment of the projects.

CHAPTER 3: STRUCTURE OF THIS REPORT

This overview structure to assist the reader retain context within the report.

CHAPTER 4: DEFINING THE OCEAN ECONOMY

A high level overview of international trends, with support in the appendix, together with an overview and update on South Africa's Operation Phakisa for the ocean economy.

CHAPTER 5: ECONOMIC CONTEXT OF THE OCEAN ECONOMY

Firstly an overview of the South African economy going back a decade in order to establish trends, followed by a twenty year projection of the South African economy with the ocean economy as defined included, with the Operation Phakisa sub-set included therein. [Four economic models, each one split into GDP and employment - eight models]



This same exercise has then been undertaken for the Eastern Cape, [Four economic models, each one split into GDP and employment – eight models], as per the figure below:





CHAPTER 6: OPERATION PHAKISA - EASTERN CAPE PROJECTS AND POTENTIAL

The eight Operation Phakisa ocean economy sectors are analysed from a national and then provincial perspective. The key projects per sector are highlighted and a table prepared which summarises the twenty-year roll-out and economic potential of the projects in terms of GDP and employment potential sector. Fifty-nine projects are highlighted.

CHAPTER 7: PORTS AND TRANSNET AS AN ECONOMIC ROLE-PLAYER The Eastern Cape ports are analysed as an important ocean economy role player.

CHAPTER 8: A 'PROJECT BOOK' OF PRIME EASTERN CAPE OCEAN ECONOMY PROJECTS Certain of the ocean economy projects identified are portrayed in 'Bid Book' format.

CHAPTER 9: CONCLUSIONS AND RECOMMENDATIONS

A set of conclusions and recommendations are formulated.

CHAPTER 10: REFERENCES The references consulted and referred to in the study are listed.

CHAPTER 11: STAKEHOLDER ENGAGEMENT A list of the stakeholders engaged with is provided.

CHAPTER 12: APPENDIX

Certain supporting and administrative pieces used in the study are highlighted here as additional information or to support the assumptions and findings made in the report.

CHAPTER 13: AN ECONOMIC OVERVIEW OF SOUTH AFRICA & THE EASTERN CAPE

An economic overview of the Eastern Cape in the context of South Africa is provided, as well as the two Metropolitan Municipalities and two of the District Municipalities, in order to provide a socio-demographic and economic profile of the province against which both the baseline and ocean economy projects can be contextualised.

4 DEFINING THE OCEAN ECONOMY

4.1 THE OCEAN ECONOMY GLOBALLY

The ocean has the potential to be the new economic frontier. It holds the promise of immense resource wealth and the potential for boosting economic growth, employment and innovation. The ocean is increasingly recognised as being indispensable for addressing many of the global challenges facing the planet in the decades to come, from world food security and climate change to the provision of energy, natural resources and improved medical care.

While the potential of the ocean to help meet these challenges is immense, it is already under stress from overexploitation, pollution, declining biodiversity and climate change. Realising the full potential of the ocean will therefore demand responsible, sustainable approaches to its economic development.

'The global ocean economy, measured in terms of the ocean-based industries' contribution to economic output and employment, is significant. Preliminary calculations on the basis of the OECD's Ocean Economy Database value the ocean economy's contribution in 2010 very conservatively at USD 1.5 trillion, or approximately 2.5% of world gross value added (GVA). Offshore oil and gas accounted for one-third of total value added of the ocean-based industries, followed by maritime and coastal tourism, maritime equipment and ports. Direct full-time employment in the ocean economy amounted to around 31 million jobs in 2010. The largest employers were industrial capture fisheries with over one-third of the total, and maritime and coastal tourism with almost one-quarter.

Economic activity in the ocean is expanding rapidly, driven primarily by developments in global population, economic growth, trade and rising income levels, climate and environment, and technology.' (OECD (2016), The Ocean Economy in 2030, OECD Publishing, Paris.]

This new "ocean economy" is driven by a combination of population growth, rising incomes, dwindling natural resources, responses to climate change and pioneering technologies. While traditional maritime industries continue to innovate at a brisk rate, it is the emerging ocean industries that are attracting most of the attention. These industries include offshore wind, tidal and wave energy; oil and gas exploration and production in ultra-deep water and exceptionally harsh environments; offshore aquaculture; seabed mining; cruise tourism; maritime surveillance and marine biotechnology. The long-term potential for innovation, employment creation and economic growth offered by these sectors is impressive. (OECD, 2016)

Numerous ocean countries have attempted to delineate the size of the ocean economy. This has been particularly challenging because of variations in definitions, standardisation methods and scope boundaries (Park and Kildow, 2015). In addition to this, is the consistent need to conserve the ocean's resources, manage them for sustainable use and deciding which entity should be responsible for the regulation of these resources (Barbesgaard, 2018). In 2015, there was a large resurgence in the call for investment in the "blue economy" on a global scale, which brought with it the need for "triple-benefit" solutions, in which social, economic and environmental stakeholders were meant to benefit. (Barbesgaard, 2018).



In addition to the issue of size, is the search for the actual definition of an ocean economy. This could be attributed to the fact that the activities in different regions differ and as such, the definition and delineation of the ocean economy will vary from one geographic location to the next. As such, it is of particular importance to understand what the South African and Eastern Cape ocean economy is comprised of, in order to develop a locally relevant definition for its context.

Numerous authors have attempted to define the ocean economy (Park and Kildow, 2015; Hosking, 2017; Findlay and Bohler-Muller, 2018). A comprehensive definition is that provided by Hosking (2017) which states that "the ocean sector (economy) is one that includes all economic activities closely linked to the ocean resources and environment and or dependent to some meaningful degree on the ocean". Findlay and Bohler-Muller (2018) add to this definition by stating that the ocean economy includes all goods and services, market and non-market which benefit the human population. This expansion by Findlay and Bohler-Muller (2018) clearly differentiates the difference between the "ocean" and "blue" economy, as the blue economy encapsulates not only the economic benefits, but also addresses the needs and effects on the environmental and social aspects of these transactions (Voyer et al., 2017).

For the purposes of this study, the Steven Hosking definition of the Ocean Economy as follows is used: 'the ocean sector (economy) is one that includes all economic activities closely linked to the ocean resources and environment and / or dependent to some meaningful degree on the ocean' (Hosking, 2017) [Our bold and italic highlights] This definition has been accepted in the compilation of this report as the most appropriate for South Africa, and it is also deemed to be suitable for the Eastern C ape Ocean Economy.

4.2 OPERATION PHAKISA IN SOUTH AFRICA

The National Development Plan (NDP) is the country's socio-economic development blueprint which enjoins us to create a better life for all citizens in an inclusive society. The NDP guides various sector plans and policies, including how budget and skills investment and other resources are allocated to move South Africa forward. It provides the framework in which Government, organised business, labour and citizens can work together to accelerate economic growth and resolve the triple challenge of unemployment, poverty and inequality.

Operation Phakisa is an initiative of the South African Government, to fast track the implementation of solutions on critical development issues. The first implementation of Operation Phakisa is led by the Department of Environmental Affairs to focus on the ocean economy. The initiative will focus on unlocking the potential of South Africa's ocean valued at an additional GDP of R129 to R177 billion and approximately one million jobs by 2033 (DEDEAT, 2014b; Operation Phakisa, 2014).

The methodology of Operation Phakisa focuses on bringing key stakeholders together to collaborate in detailed problem analysis, priority setting and intervention planning and delivery. The first Ocean Economy Lab was held in Durban from the 8th – 15th July 2014 and was concluded on the 15th August 2014.

The workshop identified four priority areas to unlock the economic potential of South Africa's ocean these were:

- · Marine transport and marine manufacturing activities,
- Offshore oil and gas exploration,
- Aquaculture, and
- Marine protection services and ocean governance (Operation Phakisa, 2014)



A further two priority areas were added thereafter with these being:

- Small harbours development, and
- Coastal and marine tourism.

Subsequent to this the two cross cutting areas have also been added:

- Skills Development and Capacity Building
- Research, Technology and Innovation.

In the Eastern Cape the marine transport and manufacturing sector has been boosted by the launch of the South African International Maritime Institute (SAIMI) a joint initiative between the SA Maritime Safety Authority (SAMSA) and the Nelson Mandela University (NMU). The institute will promote and coordinate maritime education, skills development and research to support South Africa in harnessing the potential of maritime resources. NMU has recently opened the Ocean Sciences Campus which houses the Institute for Coastal and Marine Research (CMR).

The six laboratory stream and two cross cutting areas of Operation Phakisa are highlighted in the following graphic:

Figure 2: Operation Phakisa Six Focus Areas and Two Enablers



Source: Growing The Ocean Economy Presentation, 2018.



A study conducted by the DEA which commenced in 2013 on the unrealised economic potential of South Africa's oceans found that jobs linked to the ocean economy could rise to between 800,000 and 1,000,000 by 2033, more than double the level recorded in 2010 (316,000). The findings led to the launch of the Ocean Economy leg of Operation Phakisa (Table below).

The study identified four nascent ocean economy sectors with potential for new growth that were currently not realising their full potential to GDP. These include Marine Transport and Manufacturing; Offshore Oil and Gas exploration; Aquaculture; and Marine protection services and ocean governance. These growth areas present new economic potential in respect of their contribution to GDP and job creation as it is estimated that they could contribute up to approximately 76% (of the Ocean Economy contribution) to GDP and 95% towards job creation by 2033. Growth and job creation for the Ocean Economy is currently driven by eight sectors (with the four sectors referred to above being the new potential growth areas). The table below depicts the estimated growth and job creation in those eight sectors (2010 to 2033).

Sector	GDP Grov	wth (R'bn)	Job Creation ('000)		
	2010	2033	2010	2033	
Marine transport and manufacturing	16	42 - 61	15	40 - 56	
Tourism	15	25 - 35	90	150 - 225	
Offshore oil and gas	4	11 - 17	0.4	0.8 - 1.2	
Construction	8	20 - 21	162	390 - 407	
Renewable enery	0	14 - 17	0	0.9 - 1.1	
Fisheries and aquaculture	7	10 - 16	30	170 - 250	
Communication	4	7 - 10	19	32 - 52	
Desalination	0	0.1 - 0.1	0	1.6 - 1.6	
Total	54	129 - 177	316	788 - 1004	

Table 11: Projected Growth and Job Creation within the Maritime Sector

Source: DEA, as quoted by HRDC, 2014. Page 27

Marine transport and manufacturing is expected to be the largest contributor to economic growth in the form of GDP with fisheries and aquaculture potentially the largest contributor to job creation, if construction is excluded. It is estimated that marine transport could contribute between R20 billion and R25 billion to GDP and 18,000 jobs by 2033, primarily driven by growth in cargo handling, with container volumes projected to increase by 6% per annum. Furthermore, the creation of the national ship registry is expected to assist the growth of this sector. Marine manufacturing is expected to contribute between R22 billion to GDP and 22,000 to 38,000 jobs in 2033, mainly driven by repairs and refurbishment that could contribute approximately 6% growth in both GDP and job creation.



4.2.1 A Summary of its Current State - Operation Phakisa

The contribution of these sectors toward South Africa's GDP in 2010 was estimated at R56 billion, with 316,000 employed people (Republic of South Africa, Department of Planning, Monitoring and Evaluation, 2018). The long term forecasts after the implementation of Operation Phakisa were that the country's GDP would grow by an additional figure of between R129 – R177 billion by 2033 and up to one million jobs would be created in the process (Republic of South Africa, Department of Planning, Monitoring and Evaluation, 2018). The medium term forecasts suggested that the country's GDP would grow by an additional R20 billion, and an additional 22,000 direct new jobs would be created by 2019 (Walker, 2014).

Thus far, the 2017 Operation Phakisa progress report states that R24.6 billion (R15 billion from the government) has been invested in the ocean economy in the form of port infrastructure, marine manufacturing, aquaculture and oil and gas surveys (DEA, 2017; Walker, 2018). This had resulted in the creation of 6,517 jobs, meaning that approximately 15,000 jobs would have to be created in order to meet the 2019 targets (DEA, 2017; Walker, 2018). It needs to be noted that these are direct jobs and do not include the indirect and induced jobs which would be included in the full value chain of these economic activities.

Some of the factors that have been listed as potential reasons for the delays in reaching Operation Phakisa's initial targets are:

1. DELAYS IN FINALISING AND ADOPTING LEGISLATION

The two pieces of legislation which caused the delay were the Mineral and Petroleum Resources Development Act (MPRDA) and the Marine Spatial Planning (MSP) Bill. These two pieces of legislations were important as they provided mechanisms for equitable and fair designation and use of space in the maritime domain (Walker, 2018). As these spaces often have a maximum capacity, competing uses result in limitation in the available area that can be used for aquaculture, hence the necessity for legislation to regulate the designation for uses of the space (Walker, 2018).

2. A DROP IN THE INTERNATIONAL OIL PRICE

There was a drop in the price of oil in 2014 which resulted in a delay in certain of the projects. In addition, PetroSA's Project Ikhwezi was unable to locate sufficient resources in South African fields (Department of Environmental Affairs (DEA), 2016). There is currently no estimate available for the oil and gas reserves in South Africa, making the future of this industry dependent on the discovery of commercially viable deposits (Department of Environmental Affairs (DEA), 2016). In addition to this is the risk of the facilities for oil and gas exploration being underutilised. Furthermore, the demand to change to the use of renewable energy sources means that the principles of the blue economy and sustainable development goals do not align with the need to develop the oil and gas exploration sector, putting its future at even higher risk (Walker, 2018).

3. DELAYS IN SHIP REGISTRATION

Various incentives have been provided to ship owners to register their ships with the South African registry operated by SAMSA (Walker, 2018). Unfortunately, the ship owners have been slow to register their ships on the registry, and accordingly to SAMSA, three ships are now registered (South African Maritime Safety Authority (SAMSA), 2017).

4. MARINE PROTECTED AREAS (MPA)

South Africa hoped to extend the amount of EEZ protected from 0.4% to 5% by 2019, and establishing a marine protected areas representative network (WWF-SA, 2016). This extension has large tourism potential, as well as a range of benefits, both economic and environmental (Sink, 2016). The original proposal of a network of 22 MPA's was reduced to 19, which resulted in drop of the coverage of the EEZ to 4.4%, a shortfall of 0.6% on the 2019 protection target (Department of Environmental Affairs (DEA), 2017). The MPA was gazetted in May 2019 (National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)). As of the 23rd of May 2019, 20 new MPA's have been declared, three of which are in the Eastern Cape province (National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)).



Marine protection could play a substantial role in the execution of Operation Phakisa, as the South African Navy (SAN) are responsible for ensuring that the resources along the coastline are protected and that any illegal activity is prevented (Department of Defence, 2015). As such, two projects have been developed to ensure the upgrading of equipment for the SAN; namely Project Biro and Project Hotel (Walker, 2018). Under Project Biro, six new patrol vessels will be acquired and under Project Hotel, a new hydrographic survey vessel will be obtained, replacing the antiquated current vessel, Protea (Walker, 2018). Project Hotel will cost R1.8 billion, and the purchase of the offshore patrol vessels for Project Biro have been postponed, whilst the purchase of three inshore patrol vessels has been confirmed (Walker, 2018).

Numerous companies are dependent on the awarding for the various contracts for the marine transport and manufacturing sector (Walker, 2018). The economic impact of these projects is significant and as such these delays should be addressed. (Walker, 2018).

South Africa is a member of the Indian Ocean Rim Association (IORA), and as such, has tried to align the outcomes of Operation Phakisa: Oceans economy with IORA's core objective of the blue economy (Walker, 2018). This means that South Africa could reconcile the goals of the development of its ocean economy, with the goals of a blue economy which is anchored on the principles of sustainability and responsible stewardship of the environment (Walker, 2018).

One of the reasons put forward for the delays in implementing Operation Phakisa is seen as being that despite increasing the urgency for a well-developed and understood ocean economy, one of the major hindrances to the ocean economy is the current "silo mentality" which applies to both the development and execution of plans (Walker, 2018). Integrated thinking and implementation is required in order to achieve the goals as set by Operation Phakisa, as well as efficiency and action (Walker, 2018).

4.2.2 Operation Phakisa: DEA Progress Report - May 2019

The short, medium and long-term goals in terms of jobs and economic growth are represented in the table below, in accordance with the latest progress report on Operation Phakisa.

Table 12: Operation Phakisa:- Long-Term Goals - DEA May 2019

	SHORT TERM (2016)	MEDIUM TERM (2019)	LONG TERM (2033)
Jobs	26,000	77,100	1,000,000
Economic growth (GDP contribution)	R7.5 billion	R32 billion	R129 – R177 billion

Source: Department of Environmental Affairs (DEA). 2019

The table below is a representation of the medium term goals for five of the sectors under Operation Phakisa (Marine protection services and ocean governance not included).

Table 13: Operation Phakisa:- Medium-Term Goals - DEA May 2019

	MARINE TRANSPORT AND MANUFACTURING	OFFSHORE OIL & GAS EXPLORATION	AQUA-CULTURE	SMALL HARBOURS	COASTAL & MARINE TOURISM
Jobs	6,000 to 40,000 - 50,000 created	-	2,227 to 15,000 jobs (Incl. value chain)	Potential jobs of 12,100	116,000 jobs by 2026
Economic growth (GDP contribution)	R7 billion1 to R14 – R23 billion	Promotes exploration to drill 30 new exploration wells.	R0.7 billion to R3 billion	R6 billion	R21.4 billion by 2016

Source: Department of Environmental Affairs (DEA). 2019



The ocean economy has contributed the following in terms of economic growth and job creation in the period between 2010 and 2015:

Table 14: Operation Phakisa:- Economic Growth and Job Creation - DEA

	2010	2014	2015
Jobs	316 000	413 356	425 525
Economic growth (GDP contribution)	4.4% of GDP (R110 billion)	4.6% of GDP (R125 billion)	4.4% of GDP (R128 billion)

Source: Department of Environmental Affairs (DEA). 2019

The table above provides a representation of the economic growth and job creation resulting from the ocean economy up to 2015.

The DEA report suggests that the percentage decrease in the GDP contribution between 2010 and 2015 can be attributed to a depression in the global and local economic climate, global trade growth and commodity prices being under downward pressure, low oil prices impacting negatively on the oil and gas sector, as well as a slowdown in investments, particularly from the private sector (Department of Environmental Affairs (DEA). 2019).

Furthermore, in order to ensure that the high level targets are achieved for the ocean economy, South Africa will require a real growth rate of 1.82% per annum from 2015 and a real employment rate growth rate of approximately 4.9% per annum from 2015 (Department of Environmental Affairs (DEA). 2019).

Thus far, the South African Government has unlocked R29.4 billion in investments for direct project funding and over 7,351 jobs have been created in various sectors up to 2019.



The following table highlights the current state of each of the 6 sectors and one of the enabler sectors in accordance with the updated Operation Phakisa report (Department of Environmental Affairs (DEA). 2019).

Table 15: Operation Phakisa Update - May 2019. Investment and Job Creation

	Marine transport and manufacturing	Offshore oil and gas exploration	Aqua- culture	Marine protection services and ocean governance	Small harbours	Coastal and marine tourism	Skills development and capacity building
Jobs	684 – Transnet, 4589 – Secured investments, 3705 – Private sector.	234 workers – PetroSA	2030	58	240	200	Full data unclear
Investments	R2.7 billion – Transnet infrastructure, R429 million – DTI Incentives, R9.2 billion – Secured investments, R1.15 billion – Private sector investments.	Approximately R7.643 billion – Private sector Approximately R10.806 billion – Government	R1.2 billion in total, of which over R260 million was from government	R58.55 million between 2017 and 2019 - Government	R300 million – Government. Private sector investment TBC.	R164 345 million – Government investment over the last 3 years. R112 722 million – Projected private sector investment	R1 275 800 - Private sector. R196 million - Government. R67 717 471 - SAIMI. R52 million - SAOGA.

Source: Department of Environmental Affairs (DEA). 2019
5 ECONOMIC CONTEXT OF THE OCEANS ECONOMY

As mentioned earlier, globally and nationally, the Ocean Economy is taking on an increasing importance in the policy and economic realm as land based resources reach their extractive plateau, and the ocean is recognised as a resource which if responsibly managed, could provide a sustainable answer to many of the pressing issues facing humankind at present.

5.1 THE SOUTH AFRICAN OCEAN ECONOMY

The Ocean Economy has become important to most nations because of its economic potential and the desire to simultaneously exploit the resources and opportunities in order to sustain a growing population and optimize the long-term yield of the resources. At the same time the Ocean Economy must also fulfil the role of steward of the ocean resources and environment on behalf of various important constituencies, including the international community and future generations.

The size of the area which potentially constitutes the Ocean Economy has been framed by Hoskings as follows: 'The size of South Africa's Exclusive Economic Zone is 1553 000 square kilometers, greater than the land area of the country (which is 1219 090 square kilometers). The ocean area is governed in terms of South Africa's Maritime Zones Act of 1994 and the United Nations Convention on the Law of the Sea (the Law of Sea Treaty), agreed to in 1982. (Hosking, 2013. Page 4)

The ocean environment sustains and facilitates a wide range of economic activities, not only shipping transport, recreation, fishing but also government ones, like navigation aids and information, weather forecasting, defence, sea rescue, policing and customs, marine and coastal management and research and education, and also mining, farming (aquaculture), pharmacology, science and technology and energy generation. The Ocean Economy has a significant impact on Gross Domestic Product (GDP).

'About 75% of all South Africa's trade by value (95% by volume) is transported by sea (SANGP100, 2013: 18). In 2012 exports of goods made up 24% of GDP and imports of goods as a proportion of GDP were 27% (SARB, June 2013: S-106).' (Hosking, 2013. Page 6)

The highest current valued contribution of the ocean sector within the South African economy is found to be in the primary sector, due mainly to the influence of the fishery industry. The ocean sector contributes about 6.3% of the total primary sector GDP. This compares with a 2.8% contribution to GDP in the secondary sector and a 4.6% contribution in the tertiary sector, the latter being boosted by the shipping and recreation industrial activity.

These contributions average out and in 2010 the overall contribution of the ocean-linked sector to GDP was about 4.4 percent.

Conservation of marine ecosystems should not be seen as separate from human survival and development as it is the foundation of ensuring that our oceans are able to produce the goods and services on which we rely. As a country with more ocean territory than land, the rich and productive coastal waters support thousands of jobs and contribute billions of Rand to the national economy each year. In terms of fisheries alone, historically, South Africa has harvested around 600,000 tonnes of a fish a year which provides livelihoods to over 127,000 people and food security to many. As one of the most biodiverse marine nations, with almost 2,800 kilometres of coast and 13,000 species recorded in our waters, South Africa's oceans and beaches are also a global tourist attraction contributing extensively to the South African economy.



5.2 THE OCEAN ECONOMY IN THE CONTEXT OF THE SOUTH AFRICAN ECONOMY.

5.2.1 The South African Economy - Growth and Employment

A fairly detailed analysis of the South African and Eastern Cape economies and employment trends has been undertaken in order to be able to create the baseline against which the Ocean Economy will be measured and forecast. Inherent in this exercise is an understanding of the composition of the economy, the sectors that are in growth and decline, and the relevant annual growth or decline factors.

In order to gain a clear understanding of the dynamics of the South African economy a high-level analysis of the major economic sectors and their growth or decline over the past ten years has been undertaken. The same analysis has been carried out for employment. Gross Value Added (GVA), as a proxy for Gross Domestic Product (GDP), and Employment per sector are the major indicators analysed.

A 'Decade of Economic Indicators' portrays the following:

South Africa	Gross	Value Adde	d Per Sector	(GVA)	Employment Per Sector (Formal Jobs)				
Economic	GVA - Rm	GVA - Rm	% of Total	%∆p.a.	Jobs	Jobs	% of Total	%∆ p.a.	
Sector	2008	2018	2018	2008 - 2018	2008	2018	2018	2008 - 2018	
Agriculture, Forestry & Fishing	67,072	74,157	2.6%	1.1%	818,612	845,373	6.9%	0.3%	
Mining & Quarrying	230,663	230,514	8.1%	0.0%	518,716	454,048	3.7%	-1.2%	
Manufacturing	378,963	386,883	13.5%	0.2%	1,297,028	1,214,139	9.9%	-0.6%	
Electricity, Gas & Water	67,522	65,932	2.3%	-0.2%	55,598	61,882	0.5%	1.1%	
Construction	87,300	107,665	3.8%	2.3%	480,005	634,149	5.2%	3.2%	
Trade, Catering & Accomm.	358,880	431,669	15.1%	2.0%	1,741,245	2,214,578	18.1%	2.7%	
Transport, Storage & Comm.	226,135	273,191	9.6%	2.1%	369,321	482,656	3.9%	3.1%	
Finance & Business	511,715	640,365	22.4%	2.5%	1,918,704	2,322,188	19.0%	2.1%	
General Govt. & Services	381,768	478,693	16.7%	2.5%	1,704,273	1,954,244	16.0%	1.5%	
Community, Social & Pers.	149,216	170,530	6.0%	1.4%	1,724,786	2,040,134	16.7%	1.8%	
Total GVA	2,459,234	2,859,599	100.0%	1.6%	10,628,288	12,223,391	100.0%	1.5%	

Table 16: SA Major Economic Sectors - Gross Value Added and Employment

Source: Rand International Capital interpretation of Quantec Data, 2019.

Note: The GVA figures are in constant 2010 prices in Rand million, Quantec Data, 2019 data. Employment data is for Formal employment only.

5.2.2 Economic and Employment Growth - Manufacturing Sectors - SA

A similar analysis of a 'Decade of Data' has been undertaken for the Manufacturing sector and its sub-sectors. This sector has underperformed the general economy and has recorded a GVA growth rate of 0.2% over the same period with an overall decline in employment of an aggregate 0.6%. The combined agro-processing industry indicates GVA growth of 0.6% and an employment decline of 0.7%. The 'Economic Indicators' portrays the following:

South Africa	Gross V	Gross Value Added Per Sub-Sector (GVA)				Employment Per Sub-Sector (Jobs)			
Manufacturing	GVA - Rm	GVA - Rm	% of Total	%∆p.a.	Jobs	Jobs	% of Total	%Δp.a.	
Sub-Sector	2008	2018	2018	2008 - 2018	2008	2018	2018	2008 - 2018	
Food, beverages	77,647	85,930	22.2%	1.1%	218,588	246,866	20.3%	1.3%	
Textiles, clothing	11,151	11,054	2.9%	-0.1%	125,067	85,187	7.0%	-3.2%	
Wood & Paper	32,014	30,996	8.0%	-0.3%	136,442	133,240	11.0%	-0.2%	
Fuel, petrol, chemical	82,824	91,614	23.7%	1.1%	159,833	173,424	14.3%	0.9%	
Other non-metallic	19,529	16,467	4.3%	-1.6%	77,239	60,713	5.0%	-2.1%	
Metal products, machinery	84,403	74,460	19.2%	-1.2%	308,209	275,209	22.7%	-1.1%	
Electrical machinery	8,570	8,992	2.3%	0.5%	40,568	39,895	3.3%	-0.2%	
Electronic, sound	4,856	5,902	1.5%	2.2%	16,624	19,545	1.6%	1.8%	
Transport equipment	28,792	30,780	8.0%	0.7%	120,523	108,836	9.0%	-1.0%	
Furniture and other	29,178	30,687	7.9%	0.5%	93,935	71,224	5.9%	-2.4%	
Total GVA / Jobs	378,963	386,883	100.0%	0.2%	1,297,028	1,214,139	100.0%	-0.6%	
Total Agro-Proc. GVA / Jobs	149,990	158,668	41.0%	0.6%	574,032	536,517	44.2%	-0.7%	

Table 17: SA Manufacturing Economic Sectors - Gross Value Added and Employmer	nt
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Source: Rand International Capital interpretation of Quantec Data, 2019.

Note: The Agro proceesing sector is comprised of: Food & beverages; Textiles & clothing; Wood and paper; and Furniture and Other.

Note: The GVA figures are in constant 2010 prices in Rand million, Quantec Data, 2019 data. Employment data is for Formal employment only.

Economic indicators of relevance are interpreted as follow:

- Overall the manufacturing sector's GVA grew by 0.2% p.a., and employment decreased by 0.6% p.a.
- The combined manufacturing sector GVA of R 386.88 billion realises an output or turnover of R 1.53 trillion at a factor of 3.86 times GVA, significantly higher than the average for the general economy (2.18 times).
- The agro-processing industry GVA of R 158.66 billion realises an output or turnover of R 564.83 billion at a factor of 3.56 times GVA.
- Overall the agro-processing industry grew by 0.6% per annum, with employment decreasing by 0.7% p.a. as well, indicating the phenomena known as 'Jobless Growth'.
- Food and Beverages indicates GVA growth of 1.1% p.a, and positive employment growth, at 1.3% p.a.
- Textiles and has negative GVA growth of 0.1% p.a, and an employment decline of 3.2% p.a.
- Wood and Paper had negative growth of 0.3% p.a, with employment decline of 0.2% p.a.
- Fuel and Petrol is a growth industry of 1.1% p.a., with employment also upward at 0.9% p.a.
- Electronic and Sound Equipment is the single industry after Food and Beverages which indicated a positive GVA growth at 2.2% p.a., also the highest GVA growth, and an increase in employment at 1.8% p.a.
- Furniture and other had 0.5% GVA growth p,a, but a decline in employment of 2.4% p.a.
- SA policy has been seeking to promote industrialisation by stimulating the manufacturing sector through a number of policy initiatives such as DTI incentives, IDZs, SEZs, export promotion and a number of grants and subsidies.

The relationship between GVA and employment is indicated graphically in the figure below:

Figure 4: SA Manufacturing Economic Sectors - GVA & Employment Growth Rates



Source: Rand International Capital interpretation of Quantec Data, 2019.



5.2.3 The South African Ocean Economy in Context & Looking Forward

The various studies referred to above adequately demonstrate that the Ocean Economy is a significant strategic and economic asset to any country.

In a study undertaken by Hosking in 2017 the Ocean Economy has been profiled by its contribution to Gross Domestic Product in the various economic sectors and sub-sectors with an overall economic influence being established across the sectors. The total influence in 2015 was estimated to be R 128 billion or 4.4 percent of the total economy of R 2,947 billion in 2010 terms. The Hosking metrics have been applied to the Derek Zimmerman macro-economic forecasting model in order to determine the Ocean Economy potential looking forward.

The methodology and escalation factors used per economic sector are provided in appendix 12.3 hereafter, with the estimations used for the economic forecast as follows:

Table 18: South African GDP Past Profile - Informing Forecast Rate Per Annum

Regional Output and GVA at Basic Prices by Industry			Actual	Year 1-5	Year 6-10	Year 11-15	Year 16-20
Real Gross Value Added (GVA) at basic prices, R millions, constant 2010 prices.			2013 - 2018	2019 - 2023	2024 - 2028	2029 - 2033	2034 - 2038
South Africa	GVA in R millions, Constant 2010 Prices	%	%∆ p.a.	%∆p.a.	%∆ p.a.	%∆p.a.	%∆ p.a.
	Total - Economic Sectors	100%	0.92%	1.00%	1.20%	1.50%	2.00%
	Agriculture, forestry and fishing	2.6%	0.85%	1.25%	1.25%	1.50%	2.00%
	Mining and quarrying	8.1%	-0.02%	0.00%	0.50%	1.00%	1.75%
	Manufacturing	13.5%	0.30%	0.75%	1.00%	1.00%	1.50%
	Electricity, gas and water	2.3%	-0.69%	0.75%	1.00%	1.00%	1.75%
	Construction	3.8%	0.94%	0.50%	0.75%	1.00%	2.00%
	Wholesale and retail trade, catering and accommodation	15.1%	1.11%	1.00%	1.00%	1.50%	2.00%
	Transport, storage and communication	9.6%	1.84%	1.50%	1.75%	2.00%	2.50%
	Finance, insurance, real estate and business services	22.4%	2.21%	2.25%	2.50%	3.00%	3.00%
	General government	16.7%	1.26%	1.00%	1.00%	1.50%	1.50%
	Community, social and personal services	6.0%	1.38%	1.00%	1.25%	1.50%	2.00%

Source: This reports author's interpretation of the sectoral economic data provided by Quantec Data.

The National Treasury macroeconomic data and projections have been read in the context of the Standard Industrial Classification (SIC) sectors performance and trends over the past five years, and a series of metrics for forward projections of these sectors formulated.



GDP (R m, Constant 2010 Prices)	Year 0	Year 6	Year 10	Year 15	Year 20
Sectors for Ocean Economy:-	2018	2024	2028	2033	2038
SA Total Economy [Rm]	2,859,599	3,181,255	3,463,015	3,807,275	4,367,467
Primary Sector	304,671	324,535	340,814	361,454	<u>393,187</u>
Secondary Sector	560,480	615,337	664,824	721,462	812,277
Tertiary Sector	1,994,448	2,241,383	2,457,377	2,724,359	3,162,003
- Average Grow th Per Annum - %:		1.9%	2.2%	2.0%	2.9%
SA Total Economy [GDP %]	100.0%	100.0%	100.0%	100.0%	100.0%
Primary Sector [%]	10.7%	10.2%	9.8%	9.5%	9.0%
Secondary Sector [%]	19.6%	19.3%	19.2%	18.9%	18.6%
Tertiary Sector [%]	69.7%	70.5%	71.0%	71.6%	72.4%
SA Total Ocean Economy [Rm]	127,784	144,783	159,708	178,326	207,971
Primary Sector	8,368	9,138	9,752	10,563	11,668
Secondary Sector	18,754	20,951	22,928	25,268	29,304
Tertiary Sector	100,663	114,694	127,028	142,496	167,000
- Ocean Economy as a % of Total Economy	4.5%	4.6%	4.6%	4.7%	4.8%
SA Total Ocean Economy [GDP %]	100.0%	100.0%	100.0%	100.0%	100.0%
Primary Sector [%]	6.5%	6.3%	6.1%	5.9%	5.6%
Secondary Sector [%]	14.7%	14.5%	14.4%	14.2%	14.1%
Tertiary Sector [%]	78.8%	79.2%	79.5%	79.9%	80.3%
Source: Hosking, 2017 and Zimmerman ex	trapolation for the	years ahead b	based on the H	osking metrics	for the
'Ocean Economy'.					

Table 19: Ocean Economy in the Context of the SA Major Economic Sectors - GDP

It is evident that the Ocean Economy GDP is anticipated to grow from the current R 128 billion (2018) to R 207 billion in twenty years' time (2038), an increase of R 79 billion or 61.7 percent in total, or an average of 3.13 percent per annum.



The Ocean Economy GDP according to the internationally recognised Standard Industrial Classification (SIC) for economic sectors is calculated as follows:

	Ocean GDP (R m, Constant 2010 Prices)	Year 0	Year 6	Year 10	Year 15	Year 20			
	Economic Sectors:-	2018	2024	2028	2033	2038			
1	Agriculture, Forestry and Fishing	3,708	4,327	4,805	5,465	6,244			
2	Mining and Quarrying	4,660	4,811	4,947	5,097	5,424			
3	Manufacturing [28 Sub-Sectors]	7,823	8,596	9,305	10,093	11,308			
4	Electricity, Gas and Water	164	170	175	180	187			
5	Construction & Engineering	10,767	12,184	13,449	14,995	17,809			
6	Wholesale & Retail Trade, Catering & Accom	11,683	12,837	13,895	15,117	17,524			
7	Transport, Storage and Communication	12,719	14,394	15,888	17,714	21,038			
8	Finance, Insurance, Real estate & Bus. Ser.	55,919	65,165	73,343	83,791	99,517			
9	Government	18,990	20,815	22,311	24,154	26,996			
10	Community, Social & Personal Services	1,353	1,483	1,590	1,721	1,923			
	Total Gross Domestic Product (GDP)	127,784	144,783	159,708	178,326	207,971			
	- Average Percentage Change Year On Year		2.47%	2.49%	2.93%	3.13%			
	Source: Derek Zimmerman and Nelson Mandela University (NMU), based upon Quantec Data, 2019, and Stephen Hosking definition of the 'Ocean Economy' 2017								

Table 20: SA Ocean Economy - GDP for the Standard Industrial Classification (SIC)

This data has been allocated to the Operation Phakisa framework as determined by the various laboratories in 2014, with the 'Direct GDP' being that national ratio of Operation Phakisa GDP that could be accounted for, with the balance being the 'Unaccounted for GDP' which is required in order to make up the balance in terms of the Standard Industrial Classification (SIC) tables, and based upon the Hosking methodology which has been adopted for this economic model.



	National GDP - Direct	Year 0	Year 6	Year 10	Year 15	Year 20
	Sectors for Ocean Economy:-	2018	2024	2028	2033	2038
	Total Economy GDP - Rand Million	2,859,599	3,181,255	3,463,015	3,807,275	4,367,467
1	Marine Transport and Manufacturing	16,625	18,557	20,299	22,351	25,867
	- Marine Transport	8,802	9,961	10,995	12,258	14,559
	- Marine Manufacturing	7,823	8,596	9,305	10,093	11,308
2	Tourism	11,683	12,837	13,895	15,117	17,524
3	Offshore Oil & Gas	4,660	4,811	4,947	5,097	5,424
4	Construction	10,767	12,184	13,449	14,995	17,809
5	Renewable Energy	164	2,920	5,175	10,180	15,187
6	Fisheries and Aquaculture	3,708	4,327	4,805	5,465	6,244
7	Communication	3,917	4,433	4,893	5,456	6,480
8	Desalination	500	7,000	10,000	13,000	16,000
9	Other 'Ocean Economy'	4,000	6,500	10,000	20,000	30,000
	Operation Phakisa - Direct GDP:	56,023	73,570	87,464	111,661	140,534
	Operation Phakisa - Indirect & Other:	71,761	71,213	72,244	66,666	67,437
	Ocean Economy - Total GDP (SIC):	127,784	144,783	159,708	178,326	207,971
	- % of Total GDP in SA:	4.5%	4.6%	4.6%	4.7%	4.8%

Table 21: South African Ocean Economy – GDP – Operation Phakisa Sectors

Source: Derek Zimmerman, based upon DEA Operation Phakisa, Quantec Data, 2019, & Stephen Hosking definition of the 'Ocean Economy', 2017.

The same set of economic data and metrics as formulated by the Hosking study has been applied to the national employment profile and has resulted in the following high level Ocean Economy profile in the context of the South African employment profile for the major economic sectors.



National Employment - FTE - Jobs	Year 0	Year 6	Year 10	Year 15	Year 20
Sectors for Ocean Economy:-	2018	2024	2028	2033	2038
SA Total Economy [Jobs]	12,223,391	13,728,772	14,894,394	16,649,922	18,514,407
Primary Sector	1,299,421	1,404,781	1,491,803	1,627,043	1,751,600
Secondary Sector	1,910,170	2,144,199	2,359,395	2,730,664	3,054,560
Tertiary Sector	9,013,800	10,179,791	11,043,196	12,292,215	13,708,247
- Average Grow th Per Annum - %:		2.0%	2.1%	2.4%	2.2%
SA Total Economy [Jobs %]	100.0%	100.0%	100.0%	100.0%	100.0%
Primary Sector [%]	10.6%	10.2%	10.0%	9.8%	9.5%
Secondary Sector [%]	15.6%	15.6%	15.8%	16.4%	16.5%
Tertiary Sector [%]	73.7%	74.1%	74.1%	73.8%	74.0%
SA Total Ocean Economy [Jobs]	518,408	594,120	651,083	737,081	833,549
Primary Sector	51,390	56,413	60,481	66,701	72,627
Secondary Sector	88,121	104,685	119,603	145,062	169,698
Tertiary Sector	378,897	433,023	470,998	525,319	591,224
- Ocean Economy as a % of Total Economy	4.2%	4.3%	4.4%	4.4%	4.5%
SA Total Ocean Economy [Jobs %]	100.0%	100.0%	100.0%	100.0%	100.0%
Primary Sector [%]	9.9%	9.5%	9.3%	9.0%	8.7%
Secondary Sector [%]	17.0%	17.6%	18.4%	19.7%	20.4%
Tertiary Sector [%]	73.1%	72.9%	72.3%	71.3%	70.9%
Source: Hosking, 2017 and Zimmerman e	xtrapolation for the	e years ahead	based on the H	losking metrics	for 'Ocean
Economv'.					

Table 22: Ocean Economy in the Context of the SA Major Economic Sectors - Jobs

It can be seen that the Ocean Economy employment or 'Jobs' is anticipated to grow from the current 518,408 (2018) to 833,549 in twenty years' time (2038), an increase of 315,141 or 60.79 percent in total, or an average of 3.04 percent per annum.

The Operation Phakisa figures would see jobs grow from 316,000 to 1,000,000 which would be growth of 684,000 jobs over 23 years, or 216.46 percent in total, or 9.41 percent per annum. It is submitted that these are overly ambitious targets. It is also submitted that the initial estimate of Ocean Economy jobs in 2010 at 316,000 is too low, and these should have been calculated to be closer to 400,000 jobs in 2010 based upon Stephen Hosking's metrics and methodology.



The detail for the Employment within the economic sectors according to the internationally recognised Standard Industrial Classification (SIC) economic sectors is as follows:

	Ocean National Employment - FTE	Year 0	Year 6	Year 10	Year 15	Year 20				
	Economic Sectors:-	2018	2024	2028	2033	2038				
1	Agriculture, Forestry and Fishing	42,211	47,072	50,952	56,809	62,536				
2	Mining and Quarrying	9,179	9,341	9,529	9,892	10,091				
3	Manufacturing [28 Sub-Sectors]	24,550	26,190	27,797	30,690	32,575				
4	Electricity, Gas and Water	154	164	170	177	185				
5	Construction & Engineering	63,415	78,330	91,635	114,193	136,936				
6	Wholesale & Retail Trade, Catering & Accom	59,934	70,700	79,574	93,373	107,718				
7	Transport, Storage and Communication	22,471	23,972	25,443	27,748	29,452				
8	Finance, Insurance, Real estate & Bus. Ser.	202,780	240,955	265,969	300,919	347,155				
9	Government	77,525	79,167	80,282	81,493	82,847				
10	Community, Social & Personal Services	16,186	18,229	19,731	21,785	24,052				
	Total Employment in the Ocean Economy	518,406	594,119	651,081	737,079	833,547				
	- Average Percentage Change Year On Year		2.29%	2.33%	2.54%	2.65%				
	Source: Derek Zimmerman and Nelson Mandela University (NMU), based upon Quantec Data, 2019, and Stephen									

Hosking definition of the 'Ocean Economy', 2017.



5.3 THE OCEAN ECONOMY IN THE CONTEXT OF THE EASTERN CAPE ECONOMY.

5.3.1 The Eastern Cape Economy

In order to gain an overview of the dynamics of the Eastern Cape economy, a high-level analysis of the major economic sectors and their growth or decline over the past ten years has been undertaken. The same analysis has been carried out for employment. Gross Value Added (GVA) and Employment per sector are the major indicators analysed. GVA is nett of taxes and subsidies and is used as a proxy for Gross Domestic Product (GDP) in the national context and in order to be able to relate national accounts to provincial accounts.

A 'Decade of Economic Indicators' portrays the following:

Eastern Cape	Gross Value Added Per Sector (GVA)				Employment Per Sector (Jobs)			
Economic	GVA - Rm	GVA - Rm	% of Total	%∆p.a.	Jobs	Jobs	% of Total	%Δp.a.
Sector	2008	2018	2018	2008 - 2018	2008	2018	2018	2008 - 2018
Agriculture & Fishing	3,125	3,454	1.6%	1.1%	67,593	73,883	8.1%	0.9%
Mining	598	638	0.3%	0.7%	2,207	1,723	0.2%	-2.2%
Manufacturing	28,198	29,121	13.6%	0.3%	92,337	78,744	8.7%	-1.5%
Electricity, Gas & Water	2,574	2,500	1.2%	-0.3%	2,848	3,191	0.4%	1.2%
Construction	6,843	8,190	3.8%	2.0%	33,265	43,257	4.8%	3.0%
Trade & Accommodation	36,654	41,870	19.5%	1.4%	128,320	164,946	18.2%	2.9%
Transport & Coms.	16,272	19,083	8.9%	1.7%	21,588	27,436	3.0%	2.7%
Finance & Business	37,589	44,204	20.6%	1.8%	105,052	121,394	13.4%	1.6%
General Govt.	42,738	49,148	22.9%	1.5%	187,354	208,785	23.0%	1.1%
Community, Social & Pers	14,477	16,175	7.5%	1.2%	155,291	183,653	20.2%	1.8%
Total GGP	189,068	214,383	100%	1.3%	795,855	907,012	100%	1.4%

Table 24: Eastern Cape Major Economic Sectors - Gross Value Added and Employment

Source: Rand International Capital interpretation of Quantec Data, 2019.

Note: The GVA figures are in constant 2010 prices in Rand million, Quantec Data, 2019 data. Employment data is for Formal employment only.

Economic items of relevance for the Eastern Cape are as follow:

- Overall the economy, as measured by GVA, grew by 1.3% p.a., and employment by 1.4% p.a.
- The GVA of R 214 billion realises an output or turnover of R 462 billion at a factor of 2.16 times GVA.
- Agriculture, Forestry and Fishing's GVA increased by 1.1% p.a., and employment grew 0.9%.
- Manufacturing has grown slightly, but this has been 'Jobless Growth' at a 1.5% decline in employment.
- Trade, which includes tourism, GVA has grown by 1.4% p.a., and employment by 2.9%.
- Construction GVA and employment has grown significantly by 2.0% and 3.0% respectively.
- The tertiary sectors of General Government and Services, and Community and Social Services have both seen positive economic growth, with employment growth at 1.1% and 1.8% respectively.
- Generally the primary sectors are static or in low growth and shedding jobs, with the tertiary sectors ascending faster and creating employment opportunities.

The relationship between GVA and employment for the primary economic sectors is indicated graphically in the figure below, with the low growth trajectory clearly indicated:

Figure 5:Eastern Cape Major Economic Sectors - GVA & Employment Growth Rates



Source: Rand International Capital interpretation of Quantec Data, 2019.



5.3.2 Economic and Employment Growth - Manufacturing Sectors

A similar analysis of a 'Decade of Data' has been undertaken for the Manufacturing sector and its sub-sectors. This sector has underperformed the general economy and has recorded a GVA growth rate of 0.3% over the same period with a significant decline in employment of an aggregate 1.5%. The combined agro-processing industry indicates GVA growth of 1.3% and an employment decline of 1.0%. The 'Economic Indicators' portrays the following:

Eastern Cape	Gross V	Gross Value Added Per Sub-Sector (GVA) Employment Per Sub-Sector (Jobs))	
Manufacturing	GVA - Rm	GVA - Rm	% of Total	%∆p.a.	Jobs	Jobs	% of Total	% ∆ p.a.
Sub-Sector	2008	2018	2018	2008 - 2018	2008	2018	2018	2008 - 2018
Food, beverages	6,037	7,291	25.0%	2.1%	15,040	16,552	21.0%	1.0%
Textiles, clothing	994	920	3.2%	-0.7%	9,013	5,488	7.0%	-3.9%
Wood & Paper	1,779	1,981	6.8%	1.1%	6,739	6,750	8.6%	0.0%
Fuel, petrol, chemical	5,122	4,936	16.9%	-0.4%	9,820	9,417	12.0%	-0.4%
Other non-metallic	1,582	1,374	4.7%	-1.3%	4,950	3,640	4.6%	-2.6%
Metal products, machinery	3,315	3,380	11.6%	0.2%	12,848	11,182	14.2%	-1.3%
Electrical machinery	974	802	2.8%	-1.8%	4,088	2,657	3.4%	-3.5%
Electronic, sound	240	257	0.9%	0.7%	761	761	1.0%	0.0%
Transport equipment	6,168	6,157	21.1%	0.0%	23,981	18,851	23.9%	-2.1%
Furniture and other	1,987	2,024	6.9%	0.2%	5,097	3,446	4.4%	-3.2%
Total GVA / Jobs	28,198	29,121	100.0%	0.3%	92,337	78,744	100.0%	-1.5%
Total Agro-Proc. GVA / Jobs	10,797	12,215	41.9%	1.3%	35,889	32,236	40.9%	-1.0%

Table 25: EC Manufacturing Economic Sectors - (Gross Value Added and Employment
•	

Source: Rand International Capital interpretation of Quantec Data, 2019.

Note: The Agro proceesing sector is comprised of: Food & beverages; Textiles & clothing; Wood and paper; and Furniture and Other.

Note: The GVA figures are in constant 2010 prices in Rand million, Quantec Data, 2019 data. Employment data is for Formal employment only.

Economic items of relevance are as follow:

- Overall the manufacturing sector's GVA grew by 0.3% p.a., and employment decreased 1.5% per annum.
- The combined manufacturing sector GVA of R 29.1 billion realises an output or turnover of R 108.0 billion at a factor of 3.71 times GVA, significantly higher than the average for the general economy (2.16 times).
- The agro-processing industry GVA of R 12.22 billion realises an output or turnover of R 41.16 billion at a factor of 3.37 times GVA.
- Overall the agro-processing industry grew by 1.3% per annum, with employment decreasing by 1.0% p.a. as well, indicating the phenomena known as 'Jobless Growth'.
- Food and Beverages indicates GVA growth of 2.1% per annum, and positive employment growth, at 1.0% per annum.
- Textiles and has negative GVA growth of 0.7% per annum, and a large employment decline of 3.9% p.a.
- Wood and Paper had positive growth of 1.1% per annum, with employment static.
- Electrical machinery had a large decline in GVA of 1.8% per annum, and an employment decrease of 3.5 % per annum.
- Furniture GVA has been essentially static, with a relatively large employment declined of 3.2% per annum.

The relationship between GVA and employment is indicated graphically in the figure below:

Figure 6: EC Manufacturing Economic Sectors - GVA & Employment Growth Rates



Source: Rand International Capital interpretation of Quantec Data, 2019.

It is clear to see that the trend over the past decade has been mostly negative, with only Food and Beverages indicating a positive employment and Gross Value Added trend.



5.3.3 The Eastern Cape Ocean Economy in Context & Looking Forward

The various studies referred to above adequately demonstrate that the Ocean Economy is a significant strategic and economic asset to any country.

In the study undertaken by Hosking in 2017 the South African national Ocean Economy has been profiled by its contribution to Gross Domestic Product in the various economic sectors and sub-sectors with an overall economic influence being established across the sectors. The Hosking metrics have been applied to the national and Eastern Cape provincial macro-economic forecasting model in order to determine the Ocean Economy potential looking forward. No distinction has been made at this juncture to distinguish the national from the provincial Ocean Economy, with it being assumed that the metrics and ratios remain the same.

The Eastern Cape economy and socio-demographic profile as at 2018 is analysed in some detail in section 13.1 hereafter and an analysis of the past decade of economic performance has been undertaken in section 5.2 above. Together these two sets of economic data provide a useful insight into the current situation and the trends up to 2018.

			Actual	Year 1-5	Year 6-10	Year 11-15	Year 16-20
Real Gross Valu	e Added (GVA) at basic prices, R millions, constant 2010	prices.	2013 - 2018	2019 - 2023	2024 - 2028	2029 - 2033	2034 - 2038
Eastern Cape	GVA in R millions, Constant 2010 Prices	%	%∆ p.a.	%∆p.a.	%∆p.a.	%∆ p.a.	%∆p.a.
	Total - Economic Sectors	7.5%	0.87%	0.85%	1.13%	1.63%	2.00%
	Agriculture, forestry and fishing	1.6%	-1.56%	0.00%	0.50%	1.00%	1.50%
	Mining and quarrying	0.3%	-0.26%	0.00%	0.30%	0.50%	0.75%
	Manufacturing	13.6%	0.10%	0.50%	0.75%	1.25%	1.50%
	Electricity, gas and water	1.2%	-0.49%	0.00%	0.50%	1.00%	1.25%
	Construction	3.8%	0.39%	1.00%	1.50%	2.00%	2.50%
	Wholesale and retail trade, catering and accommodation	19.5%	0.58%	1.00%	1.50%	2.00%	2.50%
	Transport, storage and communication	8.9%	1.57%	2.00%	2.00%	2.50%	3.00%
	Finance, insurance, real estate and business services	20.6%	1.58%	2.00%	2.00%	3.00%	3.00%
	General government	22.9%	1.10%	1.00%	1.00%	1.50%	2.00%
	Community, social and personal services	7.5%	0.87%	1.00%	1.20%	1.50%	2.00%

Table 26: Eastern Cape GDP Past Profile - Informing Forecast Rate Per Annum

Source: This reports author's interpretation of the sectoral economic data provided by Quantec Data.

The same exercise has been undertaken with the employment profiles over the past five years, with the major sectoral trends established and then forecast metrics established based upon these trends in the context of current sentiment and policy initiatives.



These growth assumptions have been applied to the Eastern Cape economic baseline as at 2018 and based upon information supplied by Quantec Data, with the twenty-year projections producing the following high-level results:

GDP (R m, Constant 2010 Prices)	Year 0	Year 6	Year 10	Year 15	Year 20
Sectors for Ocean Economy:-	2018	2024	2028	2033	2038
Provincial Total Economy [Rm]	214,384	231,385	246,108	263,827	298,702
Primary Sector	4,092	4,207	4,317	4,430	4,729
Secondary Sector	39,812	42,195	44,410	46,902	52,839
Tertiary Sector	170,480	184,984	197,380	212,495	241,134
- Average Growth Per Annum - %:		1.3%	1.6%	1.4%	2.6%
Provincial Total Economy [GDP %]	100.0%	100.0%	100.0%	100.0%	100.0%
Primary Sector [%]	1.9%	1.8%	1.8%	1.7%	1.6%
Secondary Sector [%]	18.6%	18.2%	18.0%	17.8%	17.7%
Tertiary Sector [%]	79.5%	79.9%	80.2%	80.5%	80.7%
Provincial Total Ocean Economy [Rm]	9,559	10,488	11,302	12,285	14,129
Primary Sector	186	191	197	202	217
Secondary Sector	1,414	1,539	1,659	1,791	2,064
Tertiary Sector	7,960	8,757	9,446	10,291	11,849
- Ocean Economy as a % of Total Economy	4.5%	4.5%	4.6%	4.7%	4.7%
Provincial Total Ocean Economy [GDP %]	100.0%	100.0%	100.0%	100.0%	100.0%
Primary Sector [%]	1.9%	1.8%	1.7%	1.6%	1.5%
Secondary Sector [%]	14.8%	14.7%	14.7%	14.6%	14.6%
Tertiary Sector [%]	83.3%	83.5%	83.6%	83.8%	83.9%
Source: Hosking, 2017 and Zimmerman extrap	polation for the	years ahead b	ased on the Ho	osking metrics	for the
'Ocean Economy'.					

Table 27: Ocean Economy in the Contex	t of the EC Major Economic Sectors - GDP
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The trends indicates that the majority of the ocean economy sector activity takes place in the tertiary sectors at 83.5%, being the average contribution over twenty years.

This tertiary sector weighting is apparent from the table below and the largest single sector is finance, insurance and real estate at 45.2% of the total.



The next largest sector is that of government at 17.8%.

The detail for the GDP of the economic sectors according to the internationally recognised Standard Industrial Classification (SIC) for economic sectors is as follows:

Table 28: Eastern Cape Ocean Economy - GDP for the SIC

	Ocean GDP (R m, Constant 2010 Prices)	Year 0	Year 6	Year 10	Year 15	Year 20
	Provincial Economic Sectors:-	2018	2024	2028	2033	2038
1	Agriculture, Forestry and Fishing	173	178	184	189	204
2	Mining and Quarrying	13	13	13	13	13
3	Manufacturing [28 Sub-Sectors]	589	617	642	672	751
4	Electricity, Gas and Water	6	6	6	6	7
5	Construction & Engineering	819	916	1,011	1,113	1,306
6	Wholesale & Retail Trade, Catering & Accom	1,133	1,209	1,283	1,362	1,541
7	Transport, Storage and Communication	888	974	1,044	1,127	1,245
8	Finance, Insurance, Real estate & Bus. Ser.	3,860	4,368	4,822	5,376	6,385
9	Government	1,950	2,070	2,154	2,275	2,512
10	Community, Social & Personal Services	128	136	143	151	167
	Total Gross Domestic Product (GDP)	9,559	10,488	11,302	12,285	14,129
	- Average Percentage Change Year On Year		1.88%	1.89%	2.33%	2.85%
	Source: Derek Zimmerman and Nelson Mandela University (NMU), based upon Quantec Data, 2019, and Stephen					

Hosking definition of the 'Ocean Economy', 2017.

Finance, insurance and real estate is the sector with the largest contribution to the Eastern Cape Ocean Economy at R 6.4 billion in 2038 or 45.2 percent. Government is the next largest sector at R 2.5 billion in 2038, or 17.8 percent.

This data has been allocated to the Operation Phakisa framework as determined by the various laboratories in 2014, with the 'Direct GDP' being that national ratio of Operation Phakisa GDP that could be accounted for, with the balance being the 'Unaccounted for GDP' which is required in order to make up the balance in terms of the Standard Industrial Classification (SIC) tables, and based upon the Hosking methodology which has been adopted for this economic model.



	,,,,,					
	Provincial GDP - Direct	Year 0	Year 6	Year 10	Year 15	Year 20
	Sectors for Ocean Economy:-	2018	2024	2028	2033	2038
			-			
	Total Economy GDP - Rand Million	214,384	231,385	246,108	263,827	298,702
1	Marine Transport and Manufacturing	1.204	1.291	1.365	1.452	1.612
	- Marine Transport	615	674	722	780	861
	- Marine Manufacturing	589	617	642	672	751
2	Tourism	1,133	1,209	1,283	1,362	1,541
3	Offshore Oil & Gas	13	13	13	13	13
4	Construction	819	916	1,011	1,113	1,306
5	Renewable Energy	6	6	6	6	7
6	Fisheries and Aquaculture	173	178	184	189	204
7	Communication	274	300	321	347	383
8	Desalination	38	525	750	975	1,200
9	Other 'Ocean Economy'	-	-	-	-	-
	Operation Phakisa - Direct GDP:	3,659	4,438	4,933	5,458	6,266
	Operation Phakisa - Indirect & Other:	5,901	6,050	6,369	6,827	7,863
	Operation Phakisa - Total GDP:	9,559	10,488	11,302	12,285	14,129
	- % of Total GDP in SA:	4.5%	4.5%	4.6%	4.7%	4.7%

Table 29: Eastern Cape Ocean Economy - GDP - Operation Phakisa Sectors

Source: Derek Zimmerman, based upon DEA Operation Phakisa, Quantec Data, 2019, & Stephen Hosking definition of the 'Ocean Economy', 2017.

Marine transport and manufacturing is the largest sector in the Eastern Cape Ocean Economy at R 1.6 billion, and with an average annual growth rate of 1.62 percent. Ocean based tourism is the next largest sector at R 1.5 billion in 2038 with an annual growth rate of 1.73 percent.

The same set of economic data and metrics as formulated by the Hosking study has been applied to the provincial employment profile and has resulted in the following high level Ocean Economy profile in the context of the South African employment profile for the major economic sectors.



Provincial Employment - FTE - Jobs	Year 0	Year 6	Year 10	Year 15	Year 20
Sectors for Ocean Economy:-	2018	2024	2028	2033	2038
SA Total Economy [Jobs]	907,012	1,031,341	1,136,043	1,300,130	1,477,608
Primary Sector	75,606	85,344	94,059	108,826	121,133
Secondary Sector	125,192	140,096	154,724	177,947	200,538
Tertiary Sector	706,214	805,901	887,261	1,013,358	1,155,937
- Average Grow th Per Annum - %:		2.3%	2.6%	2.9%	2.7%
SA Total Economy [Jobs %]	100.0%	100.0%	100.0%	100.0%	100.0%
Primary Sector [%]	8.3%	8.3%	8.3%	8.4%	8.2%
Secondary Sector [%]	13.8%	13.6%	13.6%	13.7%	13.6%
Tertiary Sector [%]	77.9%	78.1%	78.1%	77.9%	78.2%
SA Total Ocean Economy [Jobs]	35,731	41,145	45,894	53,418	61,133
Primary Sector	3,724	4,210	4,644	5,379	5,993
Secondary Sector	5,926	7,180	8,421	10,364	12,377
Tertiary Sector	26,081	29,756	32,829	37,675	42,763
- Ocean Economy as a % of Total Economy	3.9%	4.0%	4.0%	4.1%	4.1%
SA Total Ocean Economy [Jobs %]	100.0%	100.0%	100.0%	100.0%	100.0%
Primary Sector [%]	10.4%	10.2%	10.1%	10.1%	9.8%
Secondary Sector [%]	16.6%	17.4%	18.3%	19.4%	20.2%
Tertiary Sector [%]	73.0%	72.3%	71.5%	70.5%	70.0%
Source: Hosking, 2017 and RIC extrapolation Economy'.	on for the years a	head based on	the Hosking n	netrics for 'Oce	an

Table 30: Ocean Economy in the Context of the EC Major Economic Sectors - Jobs

This data clearly indicates that the tertiary sector at 73 percent is the major contributor initially, with a slight decline to 70 percent over the twenty year forecast. The secondary sector indicates strong growth from 16.6 percent in 2018 to 20.2 percent over the twenty year forecast.



The detail for the Employment within the economic sectors according to the internationally recognised Standard Industrial Classification (SIC) economic sectors is as follows:

Table 31: Eastern Cape Ocean Economy – Employment for the SIC

	Ocean Provincial Employment - FTE	Year 0	Year 6	Year 10	Year 15	Year 20
	Provincial Economic Sectors:-	2018	2024	2028	2033	2038
1	Agriculture, Forestry and Fishing	3,689	4,175	4,608	5,342	5,956
2	Mining and Quarrying	35	35	36	37	37
3	Manufacturing [28 Sub-Sectors]	1,592	1,645	1,695	1,781	1,835
4	Electricity, Gas and Water	8	9	9	10	11
5	Construction & Engineering	4,326	5,526	6,717	8,573	10,530
6	Wholesale & Retail Trade, Catering & Accom	4,464	5,982	7,271	9,280	11,844
7	Transport, Storage and Communication	1,277	1,438	1,557	1,719	1,898
8	Finance, Insurance, Real estate & Bus. Ser.	10,600	11,996	13,242	15,351	17,115
9	Government	8,283	8,792	9,149	9,616	10,106
10	Community, Social & Personal Services	1,457	1,547	1,610	1,708	1,799
	Total Employment in the Ocean Economy	35,731	41,145	45,894	53,418	61,133
	- Average Percentage Change Year On Year		2.71%	2.80%	3.13%	3.23%
	Source: Derek Zimmerman and Nelson Mandela University (NMU), based upon Quantec Data, 2019, and Stephen Hosking definition of the 'Ocean Economy', 2017.					

Similar to the GDP data, the largest economic sector for employment is Finance, insurance and real estate at 17,115 employment opportunities at 28.0 percent. The Wholesale, retail and trade sector is the next largest at R 11.84 billion or 19.4 percent of the economy. This sector is where the bulk of tourism orientated activity is recorded, which is logical here.

This data has been allocated to the Operation Phakisa framework, with the 'Direct Employment' being that national ratio of Operation Phakisa Employment that could be accounted for, with the balance being the 'Unaccounted for Employment' which is required in order to make up the balance in terms of the Standard Industrial Classification (SIC) tables, and based upon the Hosking methodology which has been adopted for this economic model.



	Provincial Employment - Direct Jobs	Year 0	Year 6	Year 10	Year 15	Year 20
	Sectors for Ocean Economy:-	2018	2024	2028	2033	2038
	Total Economy - Jobs (FTE)	907,012	1,031,341	1,136,043	1,300,130	1,477,608
1	Marine Transport and Manufacturing	2,476	2,640	2,772	2,971	3,149
	- Marine Transport	884	995	1,078	1,190	1,313
	- Marine Manufacturing	1,592	1,645	1,695	1,781	1,835
2	Tourism	4,464	5,982	7,271	9,280	11,844
3	Offshore Oil & Gas	35	35	36	37	37
4	Construction	4,326	5,526	6,717	8,573	10,530
5	Renewable Energy	8	9	9	10	11
6	Fisheries and Aquaculture	3,689	4,175	4,608	5,342	5,956
7	Communication	393	443	480	529	585
8	Desalination	37	325	612	900	1,187
9	All Other (Non Ops. Phak.]	-	-	-	-	-
	Operation Phakisa - Direct Jobs	15,428	19,135	22,506	27,643	33,300
	Operation Phakisa - Indirect & Other Jobs	20,303	22,011	23,388	25,775	27,833
	Operation Phakisa - Total Jobs	35,731	41,145	45,894	53,418	61,133
	- % of Total Jobs in SA:	3.9%	4.0%	4.0%	4.1%	4.1%

Table 32: Eastern Cape Ocean Economy - Employment - Operation Phakisa Sectors

Source: Derek Zimmerman, based upon DEA Operation Phakisa, Quantec Data, 2019, & Stephen Hosking definition of the 'Ocean Economy', 2017.

The largest economic sector in this analysis is tourism at R 11.84 billion, with an annual growth rate of 7.63. This is followed by construction at R 10.53 billion, with an annual growth rate of 6.7 percent.

5.4 THE OCEAN ECONOMY LOOKING FORWARD

This analysis has proved to be useful in that it has provided a framework in terms of the traditional and internationally used economic framework as per the Standard Industrial Classification categories, as well as in the context of the original Operation Phakisa framework and estimates. The data correlates in a fashion that is deemed to be significant and relevant for the purposes of this study.

Both sets of data for Gross Domestic Product and employment for the Ocean Economy in the Eastern Cape support one another in highlighting Marine Transport and Manufacturing, Ocean based tourism, and Finance, insurance and real estate as the sectors which indicate the strongest growth with the most potential for meaningful and sustainable economic growth for the Ocean Economy.

6 OPERATION PHAKISA - EASTERN CAPE PROJECTS AND POTENTIAL

6.1 SOUTH AFRICA'S OCEAN DOMAIN

The South African coastline stretches from the Namibian border on the west coast to the Mozambique border on the east coast. This coastline is approximately 3,000 kilometres long and traverses four provincial administrations.

South Africa exercises jurisdiction over:

- · Its internal waters, which include all harbours;
- Its territorial waters which include the sea within a distance of 12 nautical miles from the baseline established in terms of the Maritime Zones Act 15, of 1994;
- Its contiguous zone, including its marine cultural zone which includes the sea beyond the territorial waters but within
 a distance of 24 nautical miles from the baseline;
- Its Exclusive Economic Zone (EEZ) which includes the sea beyond the territorial waters but within a distance of 200 nautical miles (370 kilometres) from the baseline;
- · Marine Protected Areas (MPAs) and their significance for ocean based tourism; and
- Its continental shelf as defined in article 76 of the United Nations convention on the law of the sea.

There are many descriptions used to describe a MPAs, however, the following International Union for Conservation of Nature (IUCN) definition seems to be the most popular:

"A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (IUCN, 2019) In South Africa all MPA's are ultimately managed by the South African Government who have agreements with various MPA Management Authorities like South African National Parks (SANParks), CapeNature, Eastern Cape Parks and Tourism Agency (ECPTA), KZN Wildlife, Nelson Mandela Bay Metro (NMBM) and the City of Cape Town (CoCT).

Most South African MPA's are attached to a National Park or Nature Reserve and that Management Authority then also manages the attached MPA with funding from the SA Government channelled through its Department of Environmental Affairs (DEA) giving the Management Authorities the mandate to manage the day to day running of the MPA and its staff. Marine protected areas aim to conserve marine life and promote the conservation and effective management of biodiverse marine areas. They are an example of successful collaboration between civil society, communities and government to take care of our natural resources, particularly our marine resources. (MPA Forum. http://mpaforum.org.za/marine-protected-areas/ Website accessed on 7 July 2019)

Within the EEZ, states have the right to exploit, develop, manage and conserve all resources to be found in the water, on the ocean floor and the subsoil, including fish, minerals, oil and gas.

The physical environment of the current systems adjacent to South Africa presents it with several economic opportunities such as mining, fishing, shipping and tourism, collectively called the Ocean Economy.



The national and global significance of the southern African ocean economy further serves as a focus for national and international scientific research programmes, which provides an opportunity for South Africa to increase national competencies in a range of specialised ocean and coastal research and management applications.

South Africa has nine commercial ports, which handles cargo such as bulk minerals, break-bulk cargo, liquid cargo, agricultural, containers, automotive and oil and gas. The ports are constantly undergoing infrastructure upgrades and considering and implementing port and equipment upgrades to retain operating competitiveness and secure new markets. From west to east the commercial ports are: Port Nolloth, Saldanha Bay, Cape Town, Mossel Bay, Port Elizabeth, Ngqura, East London, Durban and Richards Bay.

6.2 MARINE TRANSPORT & MANUFACTURING (MTM)

South Africa is ideally positioned to serve the abundant and increasing east-west cargo traffic and African offshore oil and gas industry, through marine manufacturing, which includes ship and rig repair, refurbishment and boat building. The towns and cities of Cape Town, Knysna, St Francis and Durban have established credible small boat and yacht building clusters, and Cape Town has a few larger engineering works which are engaged in small to medium-sized ship building.

Marine Transport and Manufacturing Plans have been announced for unlocking economic potential and include:

- Oil & gas port infrastructure;
- · Maintaining and refurbishing existing port and ship repair facilities;
- · Fast-tracking decisions on issuing of licences;
- · Reforming the port tariff structure;
- Port facilities for boat, ship repair and rig repair; and
- Establishing a supporting funding model for infrastructure development in ports.

6.2.1 The Current Status of the OP Sector - MTM

Nationally:-

South Africa is ideally positioned to serve the east-west cargo traffic and African offshore oil and gas industry, through marine engineering and manufacturing which includes ship and rig repair, refurbishment and boat building.

Provincially:-

The Eastern Cape is home to three of the nine major commercial ports, with world class logistics facilities, dry-dock and slipway facilities and a skilled and experienced workforce.

- Plans to unlock economic potential:-Oil and gas port infrastructure, Maintaining and refurbishing existing port and ship repair facilities, Fast tracking of decisions for the issuing of trading licenses, Skills and capacity building.
- 2. Next Steps:-

Liaise with Transnet and evaluate their Port Development Framework (PDF) Plans for transport & manufacturing opportunities.



6.2.2 Projects and Initiatives of Relevance to the Eastern Cape

A number of projects and initiatives have been identified after engagement with various stakeholders and a comprehensive scan of all available literature, with further projects and information still anticipated.

 Enabling Programmes, Projects and Location:-The two Special Economic Zones (SEZs) at East London and Coega, The new liquid fuel terminal at the Port of Ngqura – value chain opportunities, Unlock investment in new and existing port facilities, Support a local registry of vessels to encourage SA Flagged Ships & construction, Encourage Transnet local procurement, Establish a new manganese terminal at the Port of Ngqura, Section 79 approval granted, Encourage the 'Composites Cluster' in Port Elizabeth, Facilitate specialist boat building in the PoPE (Sailing Catamarans, Buttcats etc.) Tugboat manufacture in PoPE, and Fishing fleet recapitalisation in PoPE.
 Drivers or Champions:-

Collaborate with Transnet & SEZs, Work with fishing industry and Maritime Clusters, and Collaborate with tertiary learning institutions for research and innovation opportunities.

These projects and initiatives have been collated and placed into the Eastern Cape Ocean Economy database in a fashion that allows for the projects to be economically modelled over a twenty year timeframe and for this data to be juxtaposed against the national and provincial main economies and ocean economies respectively.

The project details for each of these sector projects has been recorded and extrapolated over a twenty year timeframe, with project commencement dates, project capital expenditure values to implement, the commencement date for operations, the value of operations or benefits upon commencement, and the direct formal employment opportunities created from operations. This dataset for the economic sector considered has allowed a Gross Domestic Product and direct formal employment creation profile over the twenty-year timeframe to be formulated. The relevant projects are tabulated below:

Table 33: Ocean Sector: Marine	Transport and Manufacturing
--------------------------------	-----------------------------

1	Marine Transport & Manufacturing Projects:	Location	Project	Capital Value	Operating	Turnover or
	Project Name.		Commence	(Rm)	Jobs p.a.	GDP Value
			Yr 2020 - 29			p.a. (Rm)
1	Composites Cluster established in PoPE	PoPE	2021	200	50	40
2	Tugboat manufacturing for SADC - per year	Nggura	2020	150	60	50
3	SA fishing fleet recapitalisation - per year	EL & PoPE	2023	350	100	150
4	Attract one luxury cruise boat / catamaran manufacturer	PoPE	2022	400	45	90
5	Establish a specialist 'Oil Rig' maintenance & refurbishme	nt Nggura	2024	500	45	150
6	Specialist sand blasting facility	EL	2021	220	15	30
7	Dry Dock specialist maintenance company	EL	2021	150	30	75
8	Marine Boat Building Cluster	EL	2022	500	100	250
9						
10						
	Totals		8	2,470	445	835

Source: Eastern Cape ocean economy research and stakeholder engagement for this report. 2019.



6.2.3 High Level Economic Impact Assessment

The economic modelling undertaken for each of the sectors in terms of the projects listed in the table above has allowed for an Economic Impact Assessment to be undertaken for the relevant economic sector in terms of the Industrial Development Corporation (IDC) Input-Output analysis multipliers as established in 2016, and based to the year 2015. The GDP or 'turnover value' above represents the first full year of operations production or turnover in the sense of the economic impact assessment methodology employed to generate the following table.

Table 34: Economic Im	pact Assessment -	Marine Transpo	ort and Manufacturing

Marine Transport & Manufacturing (Rand Millions) - Year 20			
Direct	Indirect	Induced	Total
R 1,560	R 224	R 643	R 2,427
R 588	R 246	R 705	R 1,539
R 247	R 103	R 296	R 646
1,037	313	1,027	2,377
(Rand Millions Direct R 1,560 R 588 R 247 1,037	Direct Indirect R 1,560 R 224 R 588 R 246 R 247 R 103 1,037 313	Direct Indirect Induced R 1,560 R 224 R 643 R 588 R 246 R 705 R 247 R 103 R 296 1,037 313 1,027

Source: Rand International Capital Calculations (2019) [IDC Sector: Manufacturing, 'Other Transport Equip' (30)]

6.2.4 Synthesis and Next Steps

This Oceans Economy sector has strong potential to become a meaningful contributor to the Eastern Cape economy and needs to be concentrated upon in order to realise the full potential.

Next steps that could be considered include:

- Further engagements with the National Port Authority (NPA) for the ports of East London, Ngqura and Port Elizabeth.
- Further engagement with the two provincial Special Economic Zones (SEZs), the East London Industrial Development • Zone (ELIDZ) and the Coega Development Corporation (CDC).
- A follow-up discussion with provincial DEDEAT in order to establish their progress on a current study being undertaken on maritime boat and ship building in the province.
- An investigation into the boat and ship building clusters in Cape Town, Knysna and eThekwini.



6.3 OFFSHORE OIL AND GAS (OOG)

Africa, and particularly southern Africa, is well positioned to realise significant opportunities across the oil and gas value chain as this industry develops towards its full potential. Africa's economies are some of the fastest growing economies in the world, and while oil and gas activity will initially focus on exploration, as the industry matures other areas of the value chain will develop and play a greater role as domestic markets for oil and gas products develop.

Due to the established midstream and downstream activities in South Africa as a result of a mature downstream industry (refining and processing of oil, coal and gas), South Africa has developed as a key location for many local, regional and multinational oil and gas companies active in the value chain.

Recently, the successful exploration in Sub-Saharan Africa has resulted in increased activity in oil and gas in the region, and South Africa is well placed to serve as a permanent hub providing services and expertise for oil and gas in Africa. Particular expertise and critical mass has been reached in several subsectors of the overall upstream and midstream value chains: Fabrication and Construction; Ship/Rig Repair and Maintenance; Distribution and Logistics; and Exploration and Production Services are certain of these industries.

6.3.1 The Current Status of the Offshore Oil and Gas Sector - OOG

On a national level, the Integrated Resource Plan (IRP) provides the planning for the supply and demand of the energy mix in South Africa. In terms of investment, approximately R7,643 billion has been invested by the private sector and approximately R10,806 billion has been invested by government.

On a provincial scale, the Port of Ngqura has the advantage of readiness for the creation of the 1,000 Megawatt (MW) gas-to-power project, The development of the strategic framework has been directed to formulate an important set of actions to enable the development in each of the subsectors as follows:

- Trigger key infrastructure processes which will in turn have a catalytic effect on the provincial petrochemical, chemical and energy industry
- · Attract key investment to support or unlock upstream, midstream and downstream value chains, and
- Attract anchor projects to the Eastern Cape. This will require focused political lobbying and interventions.

6.3.2 Projects, Initiatives and Opportunities of Relevance to the Eastern Cape

The Eastern Cape and Southern Coastline have the highest potential reserves of natural gas in South Africa. As such, the following projects have been proposed in the hopes of creating a gas economy in the province:

- 1. Oil refinery at the Port of Ngqura
- 2. Fuel storage facility at the Port of Ngqura
- 3. Offshore bunkering at Algoa Bay
- 4. Fuel bunkering "value chain" facility
- 5. Liquid natural gas (LNG) terminal at the Port of Ngqura, and
- 6. 1,000 Megawatt (MW) gas-to-power project at the Port of Ngqura



These projects are currently being steered by the Department of Economic Development, Environmental Affairs and Tourism (DEDEAT), Eastern Cape. Presently, the commencement of these projects is dependent on government's decision to invest in "Oil and Gas" in Kwa-Zulu Natal (which is deemed to be the better decision in the short term), or the Eastern Cape (which is seen as the better decision in the long term due to the higher potential reserves in the province). The discussion and debate is still current.

6.3.2.1 Oil and Gas Project Value Chain - Port of Ngqura & Coega SEZ

Short term (1 – 3 years)

The Coega SEZ value chain focuses on importing liquid natural gas (LNG) in small quantities in cryogenic ISO intermodal containers, which will be used to initiate the conversion of industrial users of energy to natural gas. This stage of the project will make use of existing infrastructure, currently present at the Port of Ngqura and the existing capabilities in road and rail transport. However, significant effort will be required to overcome the barriers of conversion for end users. This is because they will need to develop confidence in the security of the supply, and assess the cost involved with long term use as well as initial conversion in order to determine the feasibility of its long term use.

Medium term (3 - 5 years)

The bulk liquid natural gas (LNG) import and export facility needs to be established in order to supply the power generation facilities in the Coega IDZ. The LNG facility will also have to include either an offshore or floating storage and regasification facility. An onshore LNG offtake point will be required to supply LNG through cryogenic ISO intermodal containers to industrial and commercial users by road or rail, and an onshore NG pipeline will supply gas to the power generation facilities in the IDZ.

Long term (>5 years)

The focus of this section of the value chain will be to replace the imported LNG with the domestic supply which will originate from either the shale gas resources in the Karoo, offshore resources or piped gas from Mozambique, and using that to supply local power generation for industrial/ commercial/ household use and for piping to Mossgas for conversion to liquid fuels.

Certain of the Offshore Oil and Gas projects considered are as follows:

Table 35: Ocean Sector: Offshore Oil and Gas

2	Offshore Oil & Gas Projects:	Location	Project	Capital Value	Operating	Turnover or
	Project Name.		Commence	(Rm)	Jobs p.a.	GDP Value
	-		Yr 2020 - 29			p.a. (Rm)
1	Oil refinery at Coega SEZ [Project Mthombo]	Coega SEZ	2024	30,000	1,000	4,500
2	Fuel storage facility at Coega (Grindrod OTG)	Nggura	2021	3,000	300	300
3	Offshore bunkering & Related (Chandling etc)	Ngqura	2020	150	45	50
4	Marine Service Centre - Bunkering Clients & Value Chain	Coega SEZ	2021	150	55	100
5	Liquid Natural Gas (LNG) import and export facility	Coega SEZ	2025	1,000	65	350
6	Gas-to-Power Plant (1,000 MW)	Coega SEZ	2023	25,000	850	8,213
7	Waste Reception Facility (Oily Slops)	Ngqura	2022	3,000	200	450
8	DEDISA Peaking Plant (500 MW) - Convert from diesel to gas	Coega SEZ	2024	1,000	25	250
9						
10						
	Totals		8	63,300	2,540	14,213

Source: Eastern Cape ocean economy research and stakeholder engagement for this report. 2019.



6.3.3 High Level Economic Impact Assessment

The GDP or 'turnover value' above represents the first full year of operations production or turnover in the sense of the economic impact assessment methodology employed to generate the following table.

Offshore Oil & Gas (Rand Millions) -		[Real value, 'Defl	ated' back - Jobs	
Economic Activity & Employment	Direct	Indirect	Induced	Total
Production / Turnover [R m]	R 25,895	R 4,070	R 5,673	R 35,638
Gross Domestic Product (GDP)	R 10,269	R 3,346	R 4,664	R 18,278
Income (Wages & Profits)	R 4,107	R 1,338	R 1,865	R 7,311
Employment (Job Years)	6,907	3,648	6,793	17,348
O	:			(4 =)]

Table 36: Economic Impact Assessment - Offshore Oil and Gas

Source: Rand International Capital Calculations (2019) [IDC Sector: Petroleum Products (15)]

6.3.4 Synthesis and Next Steps

This Oceans Economy sector has vast potential and could define the economy of the Eastern Cape over the next twenty years and create an internationally recognised oil and gas hub around the Port of Ngqura.

Next steps that could be considered include:

- Draft high level Project Information Memoranda (PIMs) or Investment Memoranda (IMs) for the top three projects, to clearly indicate the market demand and connections, the viability of the business case, the key stakeholders and parties to the various projects, a clear project structure, the respective roles of the state and the private sector, and the funding required. A more detailed Economic Impact Assessment also needs to be undertaken for each project.
- Allow the projects to become strategic provincial projects and not remain vested in State Owned Entities or quasigovernment entities which are currently stifling the potential of these projects.



6.4 AQUA-CULTURE

Fish and fishery products are among the most traded food commodities worldwide, with trade volumes and values reaching new highs in 2011 and expected to carry on rising, with developing countries continuing to account for the bulk of world exports. While capture fisheries production remains stable, aquaculture production keeps on expanding. Aquaculture is set to remain one of the fastest-growing animal food-producing sectors and, in the next decade, total production from both capture and aquaculture will exceed that of beef, pork or poultry. (FOA United Nations, 2012.)

Aquaculture is defined as the propagation, improvement, trade or rearing of aquatic organisms (i.e. plant and animal) in controlled or selected aquatic environments (i.e. fresh, sea or brackish waters) for any commercial, subsistence, recreational or other public or private purpose.

Aquaculture does not include capture fisheries, which entails the harvesting of aquatic organisms from an environment in which no attempt has been made to manage or otherwise influence any organisms by containment, feeding or application of any husbandry techniques.

South Africa has a well-established fishery sector, comprising of two components, wild capture fisheries which range from highly industrialised capital intensive fishing sectors to more accessible fishing sectors, including subsistence fisheries and an aquaculture component which is still undergoing development.

6.4.1 The Current Status of the OP Sector - Aqua-culture

With global pressure being exerted on wild fish stocks and overexploitation of all marine resources taking place, a fundamental move to aquaculture based production has taken place. Currently, 2030 jobs have been created in the South African aquaculture industry through Operation Phakisa. Financially, R1.2 billion has been invested in the industry, of which R260 million was from government.

On a provincial scale, the Eastern Cape has been at the forefront of certain aquaculture initiatives, with mixed results of large failures in certain segments and pockets of excellence in others. Two Special Economic Zones (SEZs) at East London and Coega have focused aquaculture programmes and initiatives in place.

6.4.2 Projects, Initiatives and Opportunities of Relevance to the Eastern Cape

The following projects have been proposed for the Eastern Cape:-

- 1. Four Aquaculture Development Zones (ADZs) in the Eastern Cape
- 2. Wild Coast Abalone ranching cluster in Port Elizabeth and East London
- 3. New Kob farm in Hamburg
- 4. Karoo Catch: Catfish farming
- 5. Algoa Bay Finfish Aquaculture Development Zone (ADZ)
- 6. Coega IDZ aquaculture zone
- 7. Qolora Aquaculture Development Zone (ADZ)

These projects are being driven by various stakeholders including the Department of Agriculture, Forestry and Fisheries (DAFF), Department of Rural Development and Land Reform (DRDLR), with international technical support being provided by the National Development and Reform Commission (NDRC) and the China Development Bank (CDB).



A list and the economic dynamics of the aquaculture projects considered for the Eastern Cape is as follows:

Table 57: Ocean Sector: Aquaculture	Table	37: Ocean	Sector: A	quaculture
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3	Aquaculture Projects: Project Name.	Location	Project Commence	Capital Value (Rm)	Operating Jobs p.a.	Turnover or GDP Value
			Yr 2020 - 25			p.a. (Rm)
1	Haga Haga Abalone farms - Expansion or Duplication	Haga Haga	2021	75	40	55
2	Hamburg Oyster Farm - Expansion or Duplication	Hamburg	2022	50	30	35
3	Hamburg: Kob Finfish farming	Hamburg	2022	40	25	30
4	Karoo Catch: Catfish farming - Expansion (Success???)	Graaf Reinet	2020	60	60	100
5	Algoa Bay Finfish Aquaculture Development Zone (ADZ)	NMB	2021	300	150	200
6	Coega Aquaculture Development Zone (ADZ)	NMB	2022	300	150	200
7	Qolora Aquaculture Development Zone (ADZ)	Qolora	2022	300	150	200
8	Marine Tilapia Industry Incubator (MTII) - Fish Processing	Qolora & EC	2023	1,000	470	500
9	MTII - Rural small scale agriculture - feedstock raw material	Qolora & EC	2023	500	3,000	350
10	Coega Fish Farms (Three of) [?]	NMB				
11	1 ELIDZ Aquaculture Projects [?] BMC					
	Totals		9	2,625	4,075	1,670
	Note: Marine Tilania has incremental growth beyond these starting matrics					

Source: Eastern Cape ocean economy research and stakeholder engagement for this report. 2019.

6.4.3 High Level Economic Impact Assessment

The GDP or 'turnover value' above represents the first full year of operations production or turnover in the sense of the economic impact assessment methodology employed to generate the following table.

Aquaculture & Food Processing (Rand Millions) - Year 20			[Real value, 'Defla	ted'back - Jobs
Economic Activity & Employment	Direct	Indirect	Induced	Total
Production / Turnover	R 12,061	R 2,315	R 3,953	R 18,328
Gross Domestic Product (GDP)	R 5,378	R 2,779	R 4,745	R 12,901
Income (Wages & Profits)	R 2,958	R 1,528	R 2,610	R 7,096
Employment (Job Years)	14,178	4,129	6,909	25,215
Source: Band International Canital Cala	(2010)	IDC Sector: E	and and Poverage	-1

Source: Rand International Capital Calculations (2019) | [IDC Sector: Food and Beverages]



6.4.4 Synthesis and Next Steps

This Oceans Economy sector of aquaculture holds vast potential for the Eastern Cape due to the natural endowment of natural ocean assets and a range of suitable sites for commercial exploitation. Certain of the projects being considered are labour intensive and have deep value chains which extend into rural areas, potentially providing much needed employment opportunities in these marginalised areas.

Next steps that could be considered include:

- Engaging with the two provincial SEZs for a full and frank disclosure of all of their potential aquaculture projects, and the formulation of PIMs and / or IMs for further consideration.
- Engaging with provincial DEDEAT in order to better understand the work that they are currently undertaking in this arena, together with the formulation of PIMs or IMs.
- Engaging with academia within the province, specifically for undertaking further research in certain of the projects identified above.

6.5 MARINE PROTECTION SERVICES & OCEAN GOVERNANCE (MP & OG)

International ocean governance includes the processes, agreements, rules, institutions, and such which have been developed to organise the way in which humans use the ocean and its resources. Not including the territorial waters of countries, ocean governance relates to the High Seas and international seabed "Area" which support vital biological resources.

The Marine Protection Services and Ocean Governance focus area of Operation Phakisa looked at South Africa's jurisdiction over a very large exclusive economic zone (EEZ), with an extent of one and a half million square kilometres of ocean terrain. With such a large ocean jurisdiction, effective governance is critical but will be challenging given the size and complexity of South Africa's oceans.

6.5.1 The Current Status of the MP & OG Sector

There is a global and national need to provide more certainty and security to ocean territories, to curb illegal activities and undertake monitoring and evaluation to the benefit of all. Currently, 58 jobs have been created as a result of Operation Phakisa, and the government has invested between R58.55 million into this sector between 2017 and 2019. (DEA, 2019) On the 23rd of May, a government gazette was released with the declaration of 20 new Marine Protected Areas under the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003). The declaration of these Marine Protected Areas will increase the spatial protection for South Africa's current ocean environment from 0.4% to 5.4%, providing at least some protection to 90% of the habitat types and contribute to global protection in line with South Africa's commitment to the Convention on Biological Diversity.

The newly declared MPA's in the Eastern Cape are:

- 1. Addo Elephant MPA
- 2. Amathole Offshore MPA
- 3. Port Elizabeth Corals MPA

6.5.2 Projects and Initiatives of Relevance to the Eastern Cape

The following is a short summary of the various projects under this sector of Operation Phakisa, their purpose and their current status.

6.5.2.1 Ocean economy secretariat

The purpose of this secretariat is to provide support to all Operation Phakisa: Ocean Economy focus area/delivery units responsible for the implementation of the Operation Phakisa: Ocean Economy initiatives. It has been established and is currently functional. It facilitates interdepartmental cohesion and co-operation in making sure project delivery is not impeded. Furthermore, it co-ordinates reporting and consolidates Operation Phakisa: Ocean Economy reports for the Director General Lab Coordinating Committee (LCC) and the Ministerial Management Committee (MIN MANCO). And finally, it provides secretariat duties to both the DG-LCC and Ministerial MANCO. 6.5.2.2 National Ocean and Coastal Information System (OCIMS) and extending Earth observation capacity

The product of this project is the ZA-cube2 cube satellite which was launched on 28th of December 2018. The launch was successful and communication establishment was the receipt of data. The data received revealed vessel locations and shall be utilised to further enhance the Integrated Vessel Tracking (IVT) by complimenting the AIS and VMS data. This innovation is a product of a project by young and previously disadvantaged students from the Cape Peninsula University of Technology (CPUT), and sponsored by the Department of Science and Technology.

6.5.2.3 National oceans and coast water quality management

The National Pollution Laboratory (NPL) has been established and is currently hosted and operated by the Walter Sisulu University (WSU) Mthatha Campus. High-tech equipment has been installed in order to collect and analyse samples at selected sites from three coastal provinces (namely Kwa-Zulu Natal, Eastern Cape and the Northern Cape, with the Western Cape maintaining their own provincial program).

The projects and programs identified for implementation in the Eastern Cape are as follows:

Table 39: Ocean Sector: Marine Protection and Ocean Governance

4	Marine Protection Services and Ocean Governance Project Name.	e Location	Project Commence Yr 2020 - 25	Capital Value (Rm)	Operating Jobs p.a.	Turnover or GDP Value p.a. (Rm)
1	Ocean economy secretariat	EC	2021	30	15	20
2	National ocean and coastal information system (NOCIMS)	EC	2022	40	20	25
3	NOCIMS extending earth observation capacity	EC	2023	40	20	25
4	National oceans and coast water quality management	EC	2024	50	25	30
5						
6						
7						
8						
9						
10						
	Totals		4	160	80	100

Source: Eastern Cape ocean economy research and stakeholder engagement for this report. 2019.



6.5.3 High Level Economic Impact Assessment

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The GDP or 'turnover value' above represents the first full year of operations production or turnover in the sense of the economic impact assessment methodology employed to generate the following table.

Marine Protection Services & Governance (Rand Millions).			[Real value, 'Defl	ated'back - Jobs	
Economic Activity & Employment	Direct	Indirect	Induced	Total	
Production / Turnover	R 185	R 10	R 82	R 277	
Gross Domestic Product (GDP)	R 120	R 17	R 138	R 274	
Income (Wages & Profits)	R 66	R 9	R 76	R 151	
Employment (Job Years)	245	22	201	468	
Source: Rand International Capital Calculations (2019) [IDC Sector: General Government (46)]					

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Table 40: Economic Impa	act Assessment – Marine	Protection & Ocean	Governance
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6.5.4 Synthesis and Next Steps

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This Oceans Economy sector of Marine Protection and Ocean Governance is vitally important in order to safeguard the future of the ocean resources from destruction or degradation by both international and local parties and entities. There is a global body of rules that is evolving and South Africa needs to be at the forefront of this trend and ensure that our ocean assets are adequately monitored and protected.

Next steps that could be considered include:

- More efficient monitoring of illegal fishing activities within South Africa's territorial waters, particularly of the coast of the eastern section of the Eastern Cape.
- The establishment of a public private entity to monitor and advise on ocean pollution prevention.
- Conduct a formal investigation into the dangers and risks posed by the Offshore Fuel Bunkering operation currently being operated in Algoa Bay.



6.6 SMALL HARBOUR DEVELOPMENT

South Africa needs to leverage its strategic location, infrastructure and skills base to accelerate the growth of marine transport, stimulate sustainable wildfish capture and aquaculture, improve ocean related tourism opportunities and stimulate a broad range of economic activities which can be located in and alongside small harbours. This requires that a conducive regulatory framework be provided as well as unlocking funding opportunities through administrative certainty with regard to state owned properties. The fast tracking of priority maritime infrastructure projects will assist in this process.

The South African small harbours, both proclaimed and unproclaimed have a significant role to play in the socio-economic development of the communities where they are located, together with growing the larger ocean economy. Opportunities exist for fostering South Africa's indigenous shipping industry, providing small harbours as domestic harbours under cabotage (reserving of transportation of goods domestically to indigenous ship owners) in sea transport, and creating or stimulating a ship building and repair industry, particularly targeting fishing vessels.

Small harbours are also critical in maintaining security and territorial integrity of the country, as these harbours constitute part of the borders of the Republic of South Africa.

6.6.1 The Current Status of the OP Sector - Small Harbours

1. Nationally:-

SA has approximately 2,800 kilometres of coastline with approximately 50 potential and existing unproclaimed small harbours,

The Department of Public Works (DPW) has held extensive consultation with provinces and municipalities, and identified initial development projects,

Investor conferences need to be held to stimulate private sector interest, with cogent Project Information Memoranda (PIMs) having been prepared in advance.

A total of seventy coastal projects have been identified across the four coastal provinces.

- Small harbours which have been prioritised:-Port Edward / Hibberdene (KZN) Port St Johns (Eastern Cape) Port Nolloth / Boegoebaai (Northern Cape)
- The potential for small harbours is as follows:-Safety, security & territorial integrity, Local Economic Development potential, Fishing industry enabler, Tourism enabler, and Community empowerment & social infrastructure solutions.

6.6.2 Projects and Initiatives of Relevance to the Eastern Cape

The Department of Public Works (DPW) has moved ahead with this initiative:

- A conference was organised by national DPW, in its capacity as the Delivery Unit and the Secretariat of the Small Harbours & State Coastal Properties Development Lab of Operation Phakisa: Oceans Economy.
- The mandate of the Lab was to facilitate the development of new harbours, the management of existing harbours and the further development of coastal state owned property to create a thriving oceans economy.
- Towards the official launch of the Delivery Lab, the national DPW embarked on a series of stakeholder engagements with all Coastal Local Municipalities, four Coastal District Municipalities, two Metros, Office of the Premier (OTP) and other stakeholders in the Eastern Cape.
- These engagements were to culminate into a Provincial Investor Conference, with outputs to be presented at the official launch of the Delivery Unit.

The desired outputs of this process were as follows:

- A package of pre-approved projects for presentation and discussion at Operation Phakisa Ocean Economy: Small Harbours and State Coastal Properties Development Delivery lab;
- · The establishment of communication and relationships between matched municipalities and investors, and
- The establishment of working teams per project in preparation for the delivery lab.

These were the process steps leading up to the conference:-

- The national DPW working with Coastal Municipalities, were to confirm available coastal land and ownership thereof who owns the land the municipality or NDPW?
- NDPW in partnership with OTP and ECSECC held round of workshops with individual Coastal District Municipalities and the Metros to firm-up project profiles,
- · Municipalities prepared their Investment Brochure/Booklet,
- Tasks Teams comprised of representatives from coastal municipalities and provincial government were set-up to prepare the logistics of the Conference, and identify investors.



The final list of screened projects from municipalities were clustered into the following project priority areas for all municipalities. These clusters represented the strategic priorities for small harbours in the Eastern Cape as whole:

Strategic Priorities	01 Small Craft Harbours	02 Small-scale Fishing & Aquaculture	03 Waterfront & Beachfront Dev.	04 Coastal & Marine Tourism	05 Small Town Revitalisation
Description	Infrastructure development for small-scale fishing and recreational activities (boat-launching sites, lead- in jetties, slipways, etc).	Build fish storage and processing facilities, marine aquaculture infrastructure, protection of estuaries, etc.	Encourage real estate and marina development along coastal town areas of the province.	Promote coastal and marine tourism and build the tourism infrastructure	Put in place enabling public infrastructure, i.e. ablution facilities, access roads, boardwalks, etc.

Source: DPW, 2018. Lessons learnt from Eastern Cape small harbours investors summit. (A presentation dated 8 August 2018)

6.6.3 Opportunities for Eastern Cape:-

- Projects identified and location:-Port St Johns, Port Alfred, and Port St Francis.
- 2. Drivers or Champions:-DAFF & DPW, Eastern Cape DEDEAT
- Establish a 'Small Harbours Development' campaign:-Identification of potential harbour development projects along the Eastern Cape coast, Canvass current local industry & community, Establish local 'Steering Committees', 'Sustainable Development' approach, and Involve Public stakeholders.
- 4. Initial Projects:-Local Economic Development and 'Market Demand' studies, Department of Public Works (DPW) to provide property information, Harbour or waterfront 'Master Plans' to be developed, and Promote 'Plans' and Project Information Memoranda at an investor conference.
 5. Next Steps:-
- Establish a 'Team' or 'Champion' to proceed.

With the Eastern Cape having such a long section of coastline and a number of towns and locations where small harbours can be established, it is imperative that a better understanding of the harbour opportunities is gained, together with detailed market research to establish demand and potential economic opportunities.


Certain projects such as the proposed small harbour development at Port St Johns were first mooted more than a decade ago and little or no progress has been made to date. A small task team should be assembled with the requisite skills to undertake a meaningful evaluation of this and the other projects formulated for the precinct in order to establish their viability and readiness for implementation. Projects identified for investigation are:

5	Small Harbour Development	Location	Project	Capital Value	Operating	Turnover or
	Project Name.		Commence	(Rm)	Jobs p.a.	GDP Value
	-		Yr 2020 - 25			p.a. (Rm)
1	Port St Johns Small Harbour Development - New	PSJ	2024	500	50	150
2	Port Alfred Small Harbour Development - Upgrade	Ndlambe	2023	300	40	120
3	Port St Francis Small Harbour Development - Upgrade	Kouga	2022	250	30	100
4	Investigate Dept of Public Works land for suitability	EC	2020		10	2
5	Promote coastal & marine tourism & build tourism infras.	EC	2021	200	50	50
6	Develop enabling public infra: ablutions, access, boardwalks	EC	2022	300	75	75
7	Develop small craft harbours - fishing & recreation	EC	2023	400	100	100
8	Small scale fishing & aquaculture development	EC	2024	500	120	110
9	Gonubie Small Craft Harbour	BCM	2025	500	120	110
10	Coffee Bay Small Craft Harbour	KSD	2026	400	100	90
11	Port Grovenor Small Craft Harbour	Ngquza LM	2027	350	75	85
12	Mzamba Small Craft Harbour	Mbizana LM	2028	350	75	85
13						
	Totals		12	4,050	845	1,077

Source: Eastern Cape ocean economy research and stakeholder engagement for this report. 2019.

6.6.4 High Level Economic Impact Assessment

The GDP or 'turnover value' above represents the first full year of operations production or turnover in the sense of the economic impact assessment methodology employed to generate the following table.

Table 42:

Small Harbour Development (Rand Millions) Year 20			[Real value, 'Defl	ated' back - Jobs
Economic Activity & Employment	Direct	Indirect	Induced	Total
Production / Turnover	R 1,924	R 288	R 576	R 2,787
Gross Domestic Product (GDP)	R 1,203	R 323	R 647	R 2,173
Income (Wages & Profits)	R 421	R 113	R 226	R 761
Employment (Job Years)	2,061	408	942	3,411

Source: Rand International Capital Calculations (2019) [IDC Sector: Civil engineering (36)]

6.6.5 Synthesis and Next Steps

This Oceans Economy sector of small harbour revival and development has significant economic potential due to the harbours potential central role within communities and the ability to stimulate or support other ocean economy activities. A network of small harbour developments within the Eastern Cape could provide important infrastructure linkages with the three national ports owned and operated by Transnet's National Port Authority.

Opportunities for public private partnerships or the potential to secure world class developers and operators for harbour developments with the correct commercial incentives should be explored.

Next steps that could be considered include:

- Establish a skilled task team to investigate the potential and sustainability of the small harbour development potential within the Eastern Cape,
- Evaluate the existing small harbours and potential, development sites throughout the province, particularly on land that is owned by state or municipal entities,
- · Compile Project Information Memoranda (PIM's) for all of the small harbour developments with potential, and
- Promote these potential developments at an investors conference.

6.7 COASTAL & MARINE TOURISM

Tourism is increasingly being recognised as an important economic sector with deep value chains and sectoral linkages which has the potential to play a significant role in a countries economic stimulation and employment creation, particularly countries which are well endowed with natural assets and biodiversity.

'Coastal tourism refers to land-based tourism activities including swimming, surfing, sun bathing and other coastal recreation activities taking place on the coast for which the proximity to the sea is a condition including also their respective services. Maritime tourism refers to sea-based activities such as boating, yachting, cruising, nautical sports as well as their land-based services and infrastructures' (Med-IAMER, 2013).

The Eastern Cape is particularly well endowed with an extensive coastline, rich biodiversity, all of the seven South African biomes, internationally acclaimed game reserves and wildlife conservancies, a rich and diverse culture, support infrastructure and the political will to ensure the success of the sector. The graphic below based upon the World Travel and Tourism Council (WTTC) view of tourism in South Africa in 2015 provides a comprehensive overview of the current status of the tourism market in South Africa and its future potential.



Figure 7: World Travel & Tourism Council - South African Tourism in 2015

World Travel & Tourism Council (WTTC)



The WTTC Methodology has been applied for Comparison and the Compilation of ten-year forward projections. The methodology is as follows:

5

- WTTC recognise the entire tourism value chain and include Indirect and Induced impact with Direct impact when they consider Jobs and GDP,
- 2. The **'Tourism Industry'** is seen to be the **'Direct'** impact and comprises of establishments whose principle productive activity is tourism (Hotels, taxi's etc.),
- The 'Tourism Economy' includes 'Indirect' and 'Induced' tourism activities which are further down the value chain, but still an integral part – such as capital goods, food and products supplied, clothing and uniforms etc.
- 4. Use these ratios for *regional multipliers* and ten-year *bench marks*.



Source: World Travel & Tourism Council (WTTC), 2018. South Africa Report.

Source: Rand International Capital interpretation of WTTC data, 2018.

The potential for the tourism industry in South Africa in 2025 is Gross Domestic Product of R 184.7 billion with an economic multiplier of three times for the total tourism economy, and employment of 948,000 with an economic multiplier of two times leading to a total value chain employment potential of two million jobs in 2025.

6.7.1 The Current Status of the OP Sector - Coastal and Marine Tourism

- 1. Nationally:-
- Tourism is recognised as a priority sector in SA to be pursued as an industry with deep value chains and the potential for SMME development and rural community enhancement.
- 2. Provincially:-

The Eastern Cape has rich biodiversity and some of the most popular game reserves and beaches which need to be promoted with a sound strategy in place.

Certain of the key initiative required could be as follows:-

- Infrastructure development and upgrading of beachfronts/waterfronts and marinas;
- Enhancement of Coastal Nature Reserves owned and managed by the ECPTA;
- Tourists Safety, Water quality, security of dangerous species & rough seas;
- Events focusing on those with a potential of being elevated to national and international level but also reflecting on marine component;
- Coastal and Marine Tourism Overarching Plan for the Wild Coast Tourism Corridor focusing on Port St Johns to Coffee
 Bay; and
- Enterprise and skills development aligning with other tourism development initiatives implemented.

The Operation Phakisa Laboratories have identified two key tourism nodes in the Eastern Cape out of four, for a concentration of resources and effort. These nodes are the Port St Johns to Coffee Bay node as well as the East London to Port Elizabeth and surrounds as indicated in the figure below.

Figure 8:South African Coastal and Marine Tourism Nodes



Source: Operation Phakisa Tourism Laboratory, 2017.

6.7.2 Projects and Initiatives of Relevance to the Eastern Cape

- 1. Projects & Location:-
- 'Indi-Atlantic Route' to be developed,
- · Cruise Ship Tourism needs to be pursued,
- Waterfront Developments in EL & PoPE,
- Linkages with the 'Big 7' and game reserves,
- Annual 'Sardine Run' as an 'Event',
- Celebrate rich bio-diversity with culture,
- Promote the N2 Wild Coast tourism route,
- Connect the Wild Coast tourism resorts to the N2,
- Port St Johns as a small harbour and tourist destination,
- Infrastructure upgrades selected beaches,
- Promote Blue Flag Beaches,
- Promote game farms and AENP,
- Capacitate municipal & provincial 'Tourism' Departments,
- Development of the Port St Johns Coffee Bay Master Plan,
- 2. Drivers or Champions:-
- Regional Tourism Departments,
- Project specific champions.

This analysis has indicated that the Eastern Cape has an abundance of potential tourism projects, but that the majority of these remain marginally viable and not yet ready for a number of reasons. With the major ones being unsubstantiated market demand, poor supporting hard and soft infrastructure, and a lack of project drivers or champions. The projects identified at this early stage and their economic potential is indicated in the following table:

Table 43: Ocean Sector: Coastal and Marine Tourism

6	Coastal and Marine Tourism	Location	Project	Capital Value	Operating	Turnover or
	Project Name.		Commence	(Rm)	Jobs p.a.	GDP Value
			Yr 2020 - 25			p.a. (Rm)
1	Wild Coast Tourism Corridor (PSJ to Coffee Bay)	ORT DM	2021	100	15	15
2	N2 Wild Coast Toll Road	EC	2022	2,000	150	200
3	Upgrading all beachfronts, waterfronts and marinas	EC	2021	300	35	150
4	Enhancing Coastal Nature Reserves managed by ECPTA	EC	2020	400	50	100
5	Bayworld Aquarium & Museum Development	NMB	2021	350	75	150
6	Waterfront Development - PoPE	NMB	2023	9,000	3,000	900
7	Waterfront Development - East London	EL	2025	3,500	800	300
8	NMB as a 'Watersport Capital' [Ironman, Yachting, Diving]	NMB	2021	200	50	100
9	"Transkei Gap" Coastal Infra. Devel (CID) Pre-Feasibility Study	EC	2022	500	120	250
10						
	Totals		9	16,350	4,295	2,165

Source: Eastern Cape ocean economy research and stakeholder engagement for this report. 2019.

6.7.3 High Level Economic Impact Assessment

The GDP or 'turnover value' above represents the first full year of operations production or turnover in the sense of the economic impact assessment methodology employed to generate the following table.

Coastal & Marine Tourism (Rand Millions).			[Real value, 'Defl	ated' back - Jobs
Economic Activity & Employment	Direct	Indirect	Induced	Total
Production / Turnover	R 4,016	R 663	R 1,225	R 5,904
Gross Domestic Product (GDP)	R 2,085	R 839	R 1,552	R 4,476
Income (Wages & Profits)	R 1,043	R 420	R 776	R 2,238
Employment (Job Years)	7,579	1,232	2,259	11,070

Table 44: Economic Impact Assessment - Coastal and Marine Tourism

Source: Rand International Capital Calculations (2019) [IDC Sector: Catering & accommodation (38)]

6.7.4 Synthesis and Next Steps

This Oceans Economy sector of coastal or marine tourism is potentially one of the most diverse and ubiquitous with real potential to attain large meaningful development and positive economic benefits at scale. In order to achieve this a focused and multi-tiered approach will be required in order to harness all of the relevant role players from both the public and private sector, and produce an acceptable road map and strategy which has universal acceptance.

Next steps that could be considered include:

- Compiling a more detailed and representative database of all of the tourism projects that are currently in the province, and assign a ranking in order to prioritise these based upon an acceptable ranking,
- Identify the main institutional entities for the auctioning of a 'Provincial Tourism Masterplan'.
- Draft Project Information Memoranda (PIMs) for the top-ten projects, clearly indicating their appeal and state of readiness for private sector participation and investment.
- Present the Eastern Cape tourism opportunities at an investor conference.

6.8 SKILLS AND CAPACITY BUILDING

1. Nationally:-

The Oceans Economy is supported by a co-ordinated, national maritime skills development plan. The South African International Maritime Institute (SAIMI) manages and co-ordinates five working groups, bringing together education and training providers; Oceans Economy Delivery Units; industry representatives, and academic specialists in order to develop an integrated national plan.

- 2. Provincially:-
- The EC has a broad range of fine tertiary education institutions such as Walter Sisulu University (WSU), Rhodes University and the Nelson Mandela University (NMU), which need to be engaged with in a 'Quadruple Helix' forum to enhance skills and training in the Ocean and Maritime Sector.
- Maritime Clusters should be engaged with to enhance awareness and the needs and opportunities in the maritime sectors.

6.8.1 The Current Status of the OP Sector - Skills Development & Capacity Building

More research needs to be undertaken to highlight the areas which are in short supply.

The Eastern Cape Office of the Premier (OTP) has identified the following initiatives:

- The first cohort of matriculants at the two pilot High Schools in East London sat for matric exams in 2018.
- Discussion with Boatbuilding companies to place TVET experienced learners and apprentices highlighted the need for some preparatory training before learners are placed in a capital intensive industry.
- Marine Manufacturing Task Team is developing a joint proposal for TVET Colleges to implement specialised preparatory courses and programmes to make learners ready for placement in the Boatbuilding sector.
- Three TVET Colleges interested in offering the Boatbuilding Qualification are being piloted in Kwa-Zulu Natal

Skills development partnerships are to be formed, and could be based upon the following principles:

- SAIMI assisting the Office of the Premier to place learners in relevant workplaces and to customise programmes.
- Province to finalise training model and the role of each intervention, for example:
- TVET Colleges and Transnet Engineering Workshops do the basic artisan training with workshop training included;
 - Private providers and industry training centres add on the specialised skills needed e.g.: composite training, cabinet making etc.
 - Workplace experience and training for industry specific customisation of skills.
 - Universities to develop highly specialised skills
 - Port of East London supporting the Maritime High Schools

6.8.2 Projects and Initiatives of Relevance to the Eastern Cape

It is seen as being imperative that a skills audit be undertaken in order to establish the nature and extent of skills that are required within the ocean economy and maritime sector, and that an effective suite of programmes be implemented in order to effectively close these gaps. It is as important to provide skills which are actually needed by both the public and private sectors, a match between supply and demand.

- Projects & Location:-Make use of the comprehensive aquaculture skills needs audit which was completed by DAFF in 2017, Enhance the capacity of the 'Maritime High Schools' in the Eastern Cape, Make use of the SAIMI roadmap for cross sector maritime research, innovation and knowledge management, Engage with the NMU Ocean Sciences Campus, Engage with the Institute for Coastal and Marine Sciences (CMR).
 Leverage SAIMI Skills Programs:-Eicheries and aquaculture development institute (EADI)
- Fisheries and aquaculture development institute (FADI), Skills training in the Squid Industry (SEASI), Small Business Support - TETA (Transport & Education Training Auth.), Competency Based Modular Training (CBMT) for artisans, and Mentorship Training - Artisans.
- 3. Levers to 'Unlock' the Opportunity:-'Quadruple Helix' model to be pursued.

It is undoubtedly true that skills and training lie at the heart of any developing industry and that in order to be able to make meaningful progress in the pursuit of the Ocean Economy as a major contributor to the economy of the Eastern Cape, significant skill, care and resources need to be applied to this important aspect of the sector. The projects which have been identified for skills and training at this stage are as follow:

Table 45: Ocean Sector: Skills Development and Capacity Building

7	Skill Development Projects:	Location	Project	Capital Value	Operating	Turnover or
	Project Name.		Commence	(Rm)	Jobs p.a.	GDP Value
			Yr 2020 - 25			p.a. (Rm)
1	Fisheries and Aquaculture Development Institute (FADI)	NMB	2020	1.49	20	1.49
2	Skills training in the Squid Industry (SEASI)	PA to Tsits	2020	8.95	20	1.79
3	Small Business Support - TETA (Transport & Education Training	EC	2020	1.80	20	0.90
4	Competency Based Modular Training (CBMT) for artisans	EC	2020	0.77	15	0.77
5	Mentorship Training - Artisans	EC	2020	0.09	8	0.09
6	Maritime Training College (EL TNPA)	EL	2021	10.00	20	25.00
7	Institute for Coastal & Marine Research (CMR) courses	NMB	2020	20.00	25	30.00
8						
9						
10						
	Totals		7	43	128	60

Source: Eastern Cape ocean economy research and stakeholder engagement for this report. 2019.



6.8.3 High Level Economic Impact Assessment

The GDP or 'turnover value' above represents the first full year of operations production or turnover in the sense of the economic impact assessment methodology employed to generate the following table.

Skills Development (Rand Millions).			[Real value, 'Defl	lated' back - Jobs
Economic Activity & Employment	Direct	Indirect	Induced	Total
Production / Turnover	R 117	R 19	R 32	R 168
Gross Domestic Product (GDP)	R 61	R 23	R 38	R 121
Income (Wages & Profits)	R 30	R 11	R 19	R 61
Employment (Job Years)	94	30	55	179
Source: Rand International Canital Calc	ulations (2010)	IDC Sector: O	thar convicas (11	11

Table 46: Economic Impact Assessment - Skills Development & Capacity Building

Source: Rand International Capital Calculations (2019) [IDC Sector: Other services (44)]

6.8.4 Synthesis and Next Steps

This Oceans Economy sector is seen as being foundational to the successful pursuit of the Ocean Economy within the province of the Eastern Cape, and nationally. The efforts of national entities such as SAIMI need to be supported and collaborative arrangements should be sought and structured in order to remain relevant in the national context and discourse, as well as be able to enhance the performance of regional skills and training institutions.

The strong emphasis on the Ocean Economy and Ocean Sciences by the provincial tertiary institutions needs to harnessed in order to establish and maintain 'first-mover-advantage' and create a cluster of excellence within the province.

Next steps that could be considered include:

- · Establish a provincial task team or entity to engage with SAIMI and the relevant provincial tertiary institutions to coordinate a bold, clear and coordinated skills program.
- Develop a 'Road Map' and high level overview of the provincial Ocean Economy skills enhancement framework in order to be able to contextualise this in the national and international domain.

6.9 RESEARCH, TECHNOLOGY AND INNOVATION (RTI)

It has long been recognised that innovation is a strong driver of economic growth, and that when innovation takes place within a regional location it can also realise the benefits of agglomeration and clustering. Research and innovation within particular spheres of commercial activity lead to competitive advantage being developed in that industry together with a skilled workforce which support and develop the industry to the mutual benefit of all.

6.9.1 The Current Status of the OP Sector - RTI

The Department of Science and Technology (DST), now known as the Department of Science and Innovation, has assisted in enabling research in maritime environmental studies. The South African Marine Research and Exploration Forum (SAMREF) has been established to facilitate new collaborative offshore studies to increase knowledge of the offshore marine environment relating to renewable energy potential, marine biodiversity and ecology, climate change and ecosystem functioning, as well as mitigating the policy conflict between developing an oil and gas economy and a low carbon economy. Funding has been provided to various research and academic institutions in order to conduct research to contribute to the body of knowledge and assist the development of the six main ocean sectors.

Certain of the Provinces Higher Education Institutions (HEIs) have been highly involved and invested in the ocean science and marine sector offering a range of courses and producing high levels of research output in these spheres.

Rhodes University currently has various departments working on marine related research. These departments include:

- Department of Zoology and Entomology
- Department of Ichthyology and Fisheries Science
- Department of Biochemistry and Microbiology

The Ocean Sciences Campus was opened in September of 2017 with the aim of being a hub for postgraduate ocean sciences research, teaching and innovation. Furthermore, the mission of the campus is to promote sustainable livelihoods for coastal communities through adequately researching the marine environments potential and striking a balance between marine resource preservation and resource utilisation.

Due to their geographic location and institutional focus, the University of Fort Hare and Walter Sisulu University do not have strong focus on marine related research, and this is an area that could possibly be investigated for potential expansion in future.

See appendix 12.7 for an overview of the Eastern Cape Higher Education Institutions (HEIs) which are involved in research and innovation for the ocean economy.

6.9.2 Projects, Initiatives and Opportunities of Relevance to the Eastern Cape

The South African Marine Research and Exploration Forum (SAMREF) was to establish a unit dedicated to understanding and taking advantage of the opportunities provided by oil and gas exploration activities and platforms. Furthermore, the project aims to facilitate offshore studies that would increase South Africa's knowledge of the offshore marine environment related to renewable energy potential, marine biodiversity and ecology, climate change and ecosystem functioning.



The National Research Foundation (NRF) has also been involved in the promotion and support of knowledge creation for all of the sectors through funding, human resource development and the provision of the necessary research facilities in order to facilitate the creation of knowledge, innovation and development in all fields of science and technology.

6.9.3 Projects and Initiatives of Relevance to the Eastern Cape

Due to the relative late addition of RIT to the Operation Phakisa for the Ocean Economy in South Africa, there is a paucity of specific projects which link directly to the sector. It is anticipated that this will improve in the near future. Currently the economic details for the SAMREF project are listed as per the following table:

Table 47: Ocean Sector: Research, Technology and Innovation

8	Research, Development and Innovation Project Name.	Location	Project Commence Yr 2020 - 25	Capital Value (Rm)	Operating Jobs p.a.	Turnover or GDP Value p.a. (Rm)
1	S. A. Marine Research and Exploration Forum (SAMREF)	EC	2021	35	15	20
2	Rhodes University - Ocean & Maritime Research	Makhanda	Ongoing			
3	Nelson Mandela University (NMU) - Ocean & Maritime Research	NMBM	Ongoing			
4	Walter Sisulu University (WSU) - Ocean & Maritime Research	EL	Ongoing			
5	Fort Hare University - Ocean & Maritime Research	Fort Hare	Ongoing			
6						
7						
8						
9						
10						
	Totals		1	35	15	20

Source: Eastern Cape ocean economy research and stakeholder engagement for this report. 2019.

6.9.4 High Level Economic Impact Assessment

The GDP or 'turnover value' above represents the first full year of operations production or turnover in the sense of the economic impact assessment methodology employed to generate the following table.

Table 48: Economic Impact Assessment - Research, Technology & Innovation

Research, Development & Innovation (Rand Millions).			[Real value, 'Defl	ated' back - Jobs
Economic Activity & Employment	Direct	Indirect	Induced	Total
Production / Turnover	R 38	R 5	R 11	R 55
Gross Domestic Product (GDP)	R 22	R 6	R 14	R 42
Income (Wages & Profits)	R 11	R 3	R 7	R 21
Employment (Job Years)	45	8	20	73

Source: Rand International Capital Calculations (2019) [IDC Sector: Business services (42)]



6.9.5 Synthesis and Next Steps

By recognising that this Oceans Economy sector has the potential to provide an extremely strong stimulus to the entire provincial economic initiative, due attention needs to be paid to ensuring that traction is gained in its implementation

Next steps that could be considered include:

- Ensuring that the province is represented at the national forums of DST, SAMREF and the NRF,
- Encouraging the provincial tertiary institutions to focus on producing academic research which focuses on and addresses meaningful issues which are arising in the dialogue around the Ocean Economy,
- Ensuring that community issues around the ocean economy are addressed and that ways of including SMMEs and previously marginalised communities into the ocean economy are explored and implemented.



6.10 SUMMARY OF EASTERN CAPE OCEAN ECONOMY BASELINE PROJECTS

These eight priority project areas as defined by the original Operation Phakisa Labs have rendered a set of current and credible Eastern Cape Ocean Economy projects which can now be analysed in more detail if this is deemed necessary, and be used in the process to develop an industry 'Road Map' and coherent strategy which can be used for meaningful implementation against demonstrable and measurable goals.

The stakeholder engagement process resulted in important information being collected and collated, certain of these in the form of a 'Project Book' as per the examples in chapter 8 hereafter. These projects have been analysed at a high level in the preceding sections and the project details incorporated into a project database which records the project details over a twenty year time frame to match the Eastern Cape Ocean Economy baseline, and currently has recorded fifty-nine projects within the eight Operation Phakisa economic sectors and enablers as follows:

Eastern Cape Oceans Economy Priority Projects Per Sector	Total CAPEX Rm	Year 20 GDP - Rm	Year 20 Jobs / FTE	Year 20 Projects
New EC Ocean Projects - Totals	57,204	19,726	42,152	59
1. Marine Transport & Manufacturing	1,587	588	648	8
2. Offshore Oil & Gas	40,670	10,269	3,600	8
3. Aquaculture	1,687	5,378	30,344	9
4. Marine Protection & Governance	103	120	114	4
5. Small Harbour Development	2,602	1,203	1,161	12
6. Coastal & Marine Tourism	10,505	2,085	6,065	9
7. Skills Development	28	61	194	7
8. Research & Innovation	22	22	22	1
9. Other Ocean Economy	1	1	2	1
New EC Ocean Projects - %	100.0%	100.0%	100.0%	100.0%
1. Marine Transport & Manu.	2.77%	2.98%	1.54%	13.56%
2. Offshore Oil & Gas	71.10%	52.06%	8.54%	13.56%
3. Aquaculture	2.95%	27.26%	71.99%	15.25%
4. Marine Protection & Govt.	0.18%	0.61%	0.27%	6.78%
5. Small Harbour Development	4.55%	6.10%	2.76%	20.34%
6. Coastal & Marine Tourism	18.36%	10.57%	14.39%	15.25%
7. Skills Development	0.05%	0.31%	0.46%	11.86%
8. Research & Innovation	0.04%	0.11%	0.05%	1.69%
9. Other Ocean Economy	0.00%	0.01%	0.00%	1.69%
Courses NIMIL Frankright Course Course				

Table 49: Priority Projects Identified for the Eastern Cape Ocean Economy

Source: NMU Eastern Cape Ocean Economy Assessment.

The earlier sections of this report highlighted the process which has been followed to produce a twenty year economic forecast of the major economic sectors according to the internationally recognised Standard Industrial Classification (SIC) codes, for both the South African national economy and the Eastern Cape provincial economy, together with the Hosking based methodology in order to define the Ocean Economy in the context of these two economic forecasts.



In addition to this process, the Operation Phakisa Labs work of 2014 and 2015 culminated in a schedule which forecast the national Ocean Economy in terms of both Gross Domestic Product and employment creation over a twenty year time frame to the year 2033. This data has differed substantially from the outset with the Hosking based economic model, and thus by implication with the data recorded in this report. Upon further investigation it has been determined that these variances can be reconciled as 'Unaccounted for data' which is due either to certain economic areas or domains not have been included or studied in sufficient detail, and that the indirect and induced economic impacts of the full value chain for various economic activities had not been considered.

This process culminated in the establishment of an Ocean Economy baseline for the Eastern Cape which is the theoretical trajectory that this sector should follow with all things being equal, or a 'Business As Usual' situation.

The evaluation of the current projects within the eight Operation Phakisa economic sectors has been in order to determine whether the current pipeline of projects is sufficient to meet and maintain these economic expectations, and if not, what the margin of surplus of deficit is for both Gross Domestic Product and employment opportunities. The has required that the project details for each of these fifty-nine projects be recorded and extrapolated over a twenty year timeframe, with project commencement dates, project capital expenditure values to implement, the commencement date for operations, the value of operations or benefits upon commencement, and the direct formal employment opportunities created from operations.

This dataset for the eight economic sectors considered has allowed a Gross Domestic Product and direct formal employment creation profile over the twenty-year timeframe to be formulated, which can now be juxtaposed against the baseline established.

The results of this process are indicated in the figures below:



Figure 9: Eastern Cape Ocean Economy - GDP and Employment Projection

Source: Economic Model developed for the Eastern Cape Ocean Economy study, 2019.



This data has been matched to the South African Government Medium Term Expenditure Framework with the current five-year reporting period ending in 2024, hence the first batch of data being indexed to year six, 2024.

Important issues to take note of from the data portrayed are as follows:

- The Eastern Cape Operation Phakisa Baseline data (Blue line) for both GDP and Employment commences from the 2019 baseline position and increases steadily over the twenty year forecast.
- The Eastern Cape Ocean Economy projects commence from a zero base in 2019, which is not strictly correct and a 'stocktake' of existing projects, or projects currently in the implementation phase should be undertaken to correct this.
- The Eastern Cape Ocean Economy GDP and Capital Expenditure (CAPEX) profile rises dramatically over the first five
 years as the parcel of projects being contemplated is 'implemented', with high start-up costs in the initial infrastructure expenditure stage, before this data settles down into operating revenue and GDP from year ten onwards. The
 project GDP data remains above the Eastern Cape Operation Phakisa Baseline throughout once it has moved past this
 baseline in year two to three.
- The Eastern Cape Ocean Economy Employment profile rises slowly over the first five years as the parcel of projects being contemplated is 'implemented', with low operating employment at this stage. [Construction employment has not been considered in this analysis as these are not seen as sustainable employment opportunities, and are temporary in nature.] During years six to ten the operating employment jobs increase swiftly as the suite of projects contemplated are constructed and become operational. From year ten onwards there are gradual increases in employment in line with inflation based growth as employment tracks operational increases through inflation.
- The Ocean Economy employment analysis undertaken here for these projects has only taken cognisance of the direct employment opportunities in most instances, with only a few of the projects full value chain impacts evaluated and • Construction impacts for the implementation of these capital expenditure projects is reported upon in the following section under Economic Impact Assessment.

These two datasets provide an important and holistic overview of the Eastern Cape Ocean Economy both from the position of its pure theoretical context as per the Hosking based economic forecast, as well as from the perspective of a more tangible recording of the actual projects which are currently being considered in the province.

7 PORTS & TRANSNET AS AN ECONOMIC ROLE-PLAYER

This section explores the important role that Transnet National Ports Authority plays in the Ocean Economy space in South Africa and the Eastern Cape with its three commercial ports.

7.1 TRANSNET AND FREIGHT LOGISTICS IN SOUTH AFRICA

Transnet is the custodian of South Africa's ports, rail and pipelines, with a range of supporting services, with their objective being to ensure a globally competitive freight system that enables sustained growth and diversification of the country's economy.

Transnet National Ports Authority (TNPA) is responsible for the safe, efficient and effective economic functioning of the national ports system, which it manages, controls and administers on behalf of the state, its sole shareholder, the South African Government. Transnet Port Terminals (TPT) is responsible for cargo handling and logistics management solutions, together with Transnet Freight Rail (TFR) which operates freight trains serving customers in mining, manufacturing, agriculture, forestry, containers and automotive products, amongst others. Transnet Pipelines ensures the security of supply of energy products through its network of underground pipelines.

The central ports of South Africa play a unique role in serving the Eastern Cape hinterland. Traditionally, the Port of Port Elizabeth handled most of the cargo in the region.

With the Port of Ngqura becoming operational, the role of Port Elizabeth is changing from being the primary central port to one providing complementary services to Ngqura.

In the short term, rationalisation of activities will see manganese exports and liquid bulk imports moved to the Port of Ngqura, while the Port of Port Elizabeth and East London will continue to handle significant volumes of containers and vehicles.

This creates opportunities for both the public and private sector to embark upon projects which are either related or dependent upon this suite of logistical services. The Eastern Cape network of ports is illustrated in the figure alongside.



Figure 10: Eastern Cape Ports in a National Context



Source: Transnet, 2017. National Ports Plan. 2017 Update.



The ports and freight logistics value chain is known to be relatively diverse and complicated, with a number of related, interlinked, supportive, backward and forward linkages for both private sector services and state operated services.

These services and their relevance to the general flow of cargo both inwards and outwards of a country through its port system are illustrated in the following figure:

Figure 11: Ports Service Value Chain – Import and Export Cargo



Source: UNCTAD, 1995. Strategic Port Pricing. UNCTAD/SDD/PORT/2 21 February 1995, with modifications



7.2 TRANSNET PORT DEVELOPMENT FRAMEWORK PLANS (PDFP)

The South African ports, under the jurisdiction of Transnet National Port Authority (TNPA), form an integrated national transportation freight interface for regional and international maritime trade. Quayside freight movements are supported by a range of other transportation sector economic activities from warehousing, insurance, landside transportation, supporting supplier retail and repair among others, all form critical components of the complicated value-chain of maritime commercial activities.

The South African ports have through detailed planning processes like the National Ports Plan (NPP) and the Port Development Framework Plans (PDFPs) all focused on maximising freight handling capacity, and retained pockets of maritime commercial zoned land within port boundaries in order to retain control over this land.

WSP prepared a position paper in 2015 for Transnet in order to identify suitable maritime commercial opportunities that align to each Port's unique freight footprint and local economic hinterland current activities and opportunities that could be realised on these sites.

They have explained their methodological approach in the Maritime Commercial Position Paper (MCPP) as follows:

'Economic growth is a function of the optimal use of scarce resources, in this instance, port land. The future competitiveness of the SA Port system and infrastructure will be influenced by optimising land uses within each Port, and aligning maritime commercial activities to freight and operational efficiencies. Thus the MCPP aims to assist identify potential port activities that make the most efficient land use for each individual port's maritime commercial zoned areas; and that best aligns to the unique commercial market influences facing each port.' (WSP, 2015)

The MCPP has considered six key informants drawn from national maritime and economic policy that guide future maritime commercial planning as follows:-

- 1. Coherent land use supporting port operational efficiency,
- 2. Support maritime job creation,
- 3. Deepening of the 'Maritime Economy',
- 4. Port and port hinterland enhanced linkages.
- 5. Maritime tourism. Infrastructure and service development, and
- 6. 'Peoples Port' accessibility.



The specific port related activities which were identified for each port are as follows:

Table 50: Port Based Activities Identified for	or the Eastern Cape Ocean Economy
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PORT	OPPORTUNITIES
Port Elizabeth	 Marine / Waterfront linked to the relocation of the Manganese Ore Terminal and Tank Farm Casino / Retail / Entertainment will help to encourage sustainable tourism Automotive Logistics Park driven by Volkswagen South Africa
Ngqura	 Linkages to IDZ / SEZ specialist clearing facilities Container cleaning and storage Oil & Gas Hub, Power Generation, Value chain opportunities Distribution centers Cold storage and pack house facilities for meat product exports
East London	 Ship building / Repair Marina / Waterfront Casino / Retail / Entertainment Automotive Logistics Park Maritime School / Institution

Source: WSP, 2015. Maritime Commercial Position Paper



7.3 THE 2017 PORT DEVELOPMENT FRAMEWORK PLAN (PDFP)

The National Ports Act (2005) prescribes that the National Ports Authority is to prepare and periodically update a Port Development Framework Plan (PDFP) for each port. This process ensures that the development plans remain current, remain aligned with national policies and remain inclusive of changes in the ports' environment. The creation of new capacity in the ports' system results from the implementation of the Port Development Framework Plans.

The PDFPs were reviewed within the context of the latest cargo demand forecasts. As a result of this review the gazetted port limits, berths and precincts layouts, capacity assessment and finally the PDFPs were updated. Whilst the PDFPs have remained largely unchanged from the 2017 Update, notable changes that were made may be summarized as follows:

- The provision of LNG import facilities, as part of the Department of Energy (DoE) gas-to-power programme, for Richards Bay, Ngqura and Saldanha Bay are new developments. The Richards Bay facility is planned for the short-term, whilst the Saldanha Bay and Ngqura facilities are planned for the medium-term.
- The Maritime Engineering and Maritime Commercial activities were updated as part of Operation Phakisa. New plans for Maritime Engineering include a floating dry dock facility in Richards Bay and increased land use in Saldanha Bay, Port Elizabeth, East London, Ngqura and Cape Town. New plans for Maritime Commercial facilities include expansion up the Buffalo River in East London, new waterfront development in Mossel Bay and improvements to cruise liner facilities at Durban and Port Elizabeth.
- The latest demand forecasts indicate that cargo demand has generally declined since the 2017 update. This has resulted in non-critical projects being deferred. Notable projects that were deferred include the Liquid Bulk expansion in Durban and a portion of the manganese expansion at Ngqura.



7.4 TRANSNET AND FREIGHT LOGISTICS IN THE EASTERN CAPE

In terms of the Port Development Framework Plans for the Eastern Cape all three ports have been considered for expansion opportunities and the current layout and long-term layouts for thirty years hence are illustrated in the figure below.

Figure 12: Ports Development Framework Plan (PDFP) for the Eastern Cape



Source: Transnet, 2017. National Ports Plan. 2017 Update.



The cargo flows which are expected to drive these expansion plans have been formulated in thirty year forecasts for each port and are based upon the following port infrastructure drivers and capacities.

Table 51: Eastern Cape Ports Infrastructure and Capacity

PORT	CARGO TYPE	NUMBER OF BERTHS	ACTUAL VOLUME 2016/2017	INSTALLED BERTH CAPACITY	THEORETICAL BERTH CAPACITY	LATENT BERTH CAPACITY	UNIT
	Containers	2	159 241*	400 000	600 000	440 759	TEUs/year
	Break Bulk	3	601 814	1600 000	1 600 000	998 186	Tons/year
Port Elizabeth	Automotive	1	115 627	240 000	410 000	294 373	Units/year
Enzabotii	Liquid Bulk	1	939 771	3 000 000	3 000 000	2 060 229	Kilolitres/year
	Manganese	1	7 446 310	6 000 000	6 000 000	-1 446 310**	Tons/year
Maguro	Containers	4	605 406	1500000	2 000 000	1 394 594	TEUs/year
Ngqura	MPT	3	72 139	2 750 000	6 000 000	5 927 861	Tons/year
	Containers***	2	67 895	100 000	200 000	132 105	TEUs/year
	Break Bulk	4	14 954	570 000	570 000	555 046	Tons/year
East London	Automotive	2	109 020	130 000	790 000	680 980	Units/year
London	Liquid Bulk	1	916 678	3 000 000	3 000 000	2 083 322	Kilolitres/year
	Dry Bulk	2	306 885	984 000	2 000 000	1 693 115	Tons/year

Source: Transnet, 2017. National Ports Plan. 2017 Update

* A total of 44 206 skiptainers (manganese) were additionally handled.

** Excess manganese volumes were handled in skiptainers.

*** Containers are handled at the Break Bulk / Multi-Purpose Terminal (MPT) berths

The projected cargo volumes for the three Eastern Cape ports for the top cargo types are illustrated in the combined graphics below, indicating the capacity ceilings which have been considered when designing the port layouts.





Table 52: Eastern Cape Ports Cargo Volumes and Capacity











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7.5 EASTERN CAPE PORTS AND OPERATION PHAKISA

Transnet and Transnet National Ports Authority for the three regional ports based in the Eastern Cape are constantly evaluating and implementing infrastructure projects of a capital nature, operational improvements and skills, training and capacity building exercises in order to improve their efficiencies and maximise the use of their operating assets and profitability.

This means that these projects would have occurred whether Operation Phakisa was established or not. What is important for the sake of this study is to determine which of these projects offer opportunities further along the value chain, either for other or related state owned entities, of for the private sector to undertake these projects, either on their own or in the form of a public private partnership.



8 A 'PROJECT BOOK' OF PRIME EC OE PROJECTS

In order to be able to prepare for an investors conference, provisionally being considered for September 2019, it is preferable to have prepared a suite 'Information Memorandum' or 'Bid Books' for evaluation by potential investors, project partners, stakeholders or funders of the various Eastern Cape Ocean Economy projects. These projects should be 'investment ready' and merely need the correct stakeholders and funding in order to form the required partnerships or institutional arrangements to move towards implementation

8.1 THE 'BID BOOK' STRUCTURE AND CONTENT ADOPTED FOR TOP-TEN' EC OE PROJECTS

The following broad structure was adopted to formulate the 'Bid Book' structure and content.

#	LABEL	NARRATIVE
1	Project Name	
2	Project Location	
3	Project Owner / Driver	Who is promoting the project.
4	Brief Project Overview [Nature or function, primary purpose, service or clients, rationale]	What is the primary objective of the project? Who are the ultimate clients, users or beneficiaries? What goods or services is it seen as providing? Why is there this need, and what will the project ultimately achieve? What is the benefit to society, or a particular user or group? Any other relevant information
5	Capital Value [R m]	The total value for the implementation over the whole project horizon until effective commissioning or opening of the project or facility.
6	Construction Start Date	
7	Constructions Jobs p.a.	Full Time Equivalent (FTE) jobs, in other words, an employment position for the duration of a year. If that person does the same job for two years, then it is recorded as 'Two FTE'.
8	Operation Start Date	
9	Operating Costs p.a.	What the operating costs for the project are per year, once it is operational and in normal steady state.
10	Operating Jobs p.a.	The FTE operating jobs that are required to operate the project or facility in any one normal year of operations.

Table 53: Bid Book - Ocean Economy Project Description & Key Metrics



#	LABEL	NARRATIVE
11	Turnover or Value (GVA)	The value that the project generates in any one normal and stabilised year. This would be the turnover in the case of a business, the gate fees for a museum, the marketing rights, the freight charges, or the tourism potential that it unlocks. A road may have many indirect benefits which need to be considered.
12	Economic Linkages	To any other industries. Supplier inputs, support industries, enabling industries
13	'Lever' to 'Unlock'	Has the project or initiative become blocked or stuck in some form of bureaucratic, legislative or political impasse. Who, what or how can this impasse be resolved. What sort of an intervention is required.
14	Any Other Points	
15	Project Map or Image, or both.	Ideally a map to indicate where it is located with reference to a town, feature in the town, road network or the like.
		An image of the completed project. Ideally it should indicate its function or purpose.



8.1.1 Bid Book - Bayworld Oceanarium & Museum Complex

The Eastern Cape Ocean Economy high level profile and economic summary of this project is contained in the table hereafter

Table 54: Bid Book -	Bayworld Pro	iect Description - N	MB
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#	LABEL	NARRATIVE
1	Project Name	Bayworld Precinct 2020
2	Project Location	Nelson Mandela Bay Municipality (NMBM), Humewood beachfront.
3	Project Owner / Driver	The Mandela Bay Development Agency (MBDA) Ms Dorelle Sapere (Project Manager) and Mr Ashraf Adam (CEO)
4	Brief Project Overview [Nature or function, primary purpose, service or clients, rationale]	The MBDA has been mandated by the Nelson Mandela Bay Metropolitan Municipal- ity as a transdisciplinary implementing agent for programmes, projects and events within its 6 mandated areas, which are to be aligned to the various plans of the NMBM.
		The Happy Valley Programme which includes Telkom Park, Bayworld and the green lung of Happy Valley itself, is one such programme which is located within the PE CENTRAL/BAAKENS/HAPPY VALLEY mandate area.
		The MBDA has recognised that the Happy Valley Precinct, when linked to the Baak- ens Valley Development and Proposed Waterfront, is uniquely positioned to become a new, inclusive heart for Nelson Mandela Bay and has approached the redevelop- ment with that objective. The intent is that the precinct should be socially, spa- tially and economically transformed into an inclusive, post-apartheid precinct that enables multi-generational, multi-cultural and mixed income usages. It is envis- aged that a unique tourism opportunity will be created through the activation of the green lung, an ICC developed within the precinct, Bayworld be repurposed and that an inclusive housing development be part of a new model for the precinct. The opportunity of developing the precinct as a green, smart and off the grid destina- tion will be pursued.
5	Capital Value [R m]	Awaiting estimates from Ms Dorelle Sapere
6	Construction Start Date	Awaiting estimates from Ms Dorelle Sapere
7	Constructions Jobs p.a.	Awaiting estimates from Ms Dorelle Sapere
8	Operation Start Date	Awaiting estimates from Ms Dorelle Sapere
9	Operating Costs p.a.	Awaiting estimates from Ms Dorelle Sapere
10	Operating Jobs p.a.	Awaiting estimates from Ms Dorelle Sapere
11	Turnover or Value (GVA)	Awaiting estimates from Ms Dorelle Sapere



#	LABEL	NARRATIVE
12	Economic Linkages	 A critical economic and social transformation asset as an integral part of the tourist experience: One more day from ADDO International Visitors Current international visitors to Addo = 216 000 visitors/annum Average spend per visitor = R5 000.(conservatively) Total direct spend = R1,080 billion Using a low factor of 3X direct spend = R3,240 billion Using a high factor of 7x direct spend = R7,560 billion
13	'Lever' to 'Unlock'	 A co-operative governance agreement was signed in June 2016 between EP DS-RAC and NMBM until March 2021; In order to facilitate a World Class Tourist Attraction and Flagship Heritage Institution; "Project" means the redevelopment and management of the Oceanarium and Snakepark; EP SRAC will continue to fund existing personnel within the approved organisational structure of Bayworld; NMBM to recommend a sustainable operating model and provide additional funding for Bayworld's infrastructure; A steering committee was established on 11 September 2018:- SRACn NMBM, MBDA, NMU DoE, DST, ECDC, NMBBC, DEDEAT Funding has been secured in an amount of R
14	Any Other Points	 Vision: Bayworld as a World Class Yourist Attraction and Flagship Heritage Insitution; Mission: Create a spectacular, iconic place that is the headquarters of a Nelson Mandela Bay Eco Tourism experience, rooted in the heritage and culture of the Eastern Province that will drive conservation and economic development. Objectives: Drive economic development and widespread job creation for the Nelson mandela Bay and the province through tourism, science and opportunities within the oceans economy; Unlock the green, built and cultural heritage of the province and make it work spatially, socially and economically; Package the wealth of toursim offerings of the province and provide access to them by providing a digital experience of each and follow up with experiences in the wild; Conserve the terrestrial and oceans dio-diversity; Drive up education, knowledge, dissemination and research programme that will simulate minds; Enable social cohesion through access to the experience by multi age, multi-cultural and multi-economic groups from the NMBM and Eastern Cape Province;





Components of Bayworld

The Port Elizabe The Snake Park

- The Oceanarium
 The Conference Centre (Old Ti
- Research and Education
- Auble additional Con
- Erf 3459
- Happy Valley, Shark River and Telkom Park
 Nelson Mandela Bay Science & Technology Centre.
- Art Museum
 South End Managem





8.1.1 Bid Book – Gas-To- Power Project for Coega SEZ

The Eastern Cape Ocean Economy high level profile and economic summary of this project is contained in the table hereafter.

Table 55. Diu Duuk – Gas-Tu-Puwer Project Description	Table	55: Bid	Book -	Gas-To-	Power	Projec	t Descri	otion
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#	LABEL	NARRATIVE
1	Project Name	1,000 Megawatt (MW) Gas-to-Power (GTP) project
2	Project Location	Coega Special Economic Zone (SEZ), near the Port of Ngqura
3	Project Owner / Driver	Department of Economic Development, Environmental Affairs and Tourism (DEDEAT), Eastern Cape
4	Brief Project Overview [Nature or function, primary purpose, service or clients, rationale]	The Eastern Cape and the Southern Coastline currently has the highest potential reserves of natural gas in South Africa. The most desired outcome would be to beneficiate the gas locally before exporting it elsewhere. Large reserves have been found at Brulpadda of the southern coast.
	-	Coega/Ngqura currently has the advantage of having technical readiness for the creation of a 1,000 MW gas-to-power project, however national decision making seems to be aligned towards Richards Bay for a 3,000 MW power plant and multi-purpose gas hub.
5	Capital Value [R m]	R25 billion investment value
6	Construction Start Date	Awaiting information from DEDEAT
7	Constructions Jobs p.a.	8,500 jobs at construction (Duration not specified)
8	Operation Start Date	Awaiting information from DEDEAT
9	Operating Costs p.a.	Awaiting information from DEDEAT
10	Operating Jobs p.a.	Awaiting information from DEDEAT
11	Turnover or Value (GVA)	Awaiting information from DEDEAT
12	Economic Linkages	The establishment of the 1,000 MW Gas-to-Power plant will lead to security of power supply both locally and nationally. The project will have a positive impact on the economic contribution of the region.
13	'Lever' to 'Unlock'	The key to unlocking the project would be to create a gas hub at Coega/Ngqura which would be anchored around the 1,000 MW Gas-to-Power project. This would also involve the short-term imports of LNG.









8.1.2 Bid Book - Tilapia Aquaculture

The Eastern Cape Ocean Economy high level profile and economic summary of this project is contained in the table hereafter.

Table 56:	3id Book – Marine Tilapia Aquaculture	

#	LABEL	NARRATIVE
1	Project Name	Marine Tilapia Industry Incubator (MTII)
2	Project Location	Eastern Cape and KZN, trial in Qholotha ADZ
3	Project Owner / Driver	THAPI Aqua Kulcha (Pty) Ltd
4	Brief Project Overview [Nature or function, primary purpose, service or clients, rationale]	The raison d'être of the MTII is to promote and support the development of a large- scale and inclusive marine tilapia farming industry rurally-anchored along the sub-tropical coastal eastern seaboard of South Africa.
	-	There is an increase in the consumption of "whitefish" in SA and the aquaculture industry is able to make up the shortfalls in affordable whitefish supply. Increased exports of certified Cape hake has precipitated increased price pressure on our finite marine fisheries resources in recent years, resulting in imports of sub- standard Chinese pond farmed tilapia and Pangasius spp. (tra/basa) into South Africa to fill the growing supply-demand gap for a more affordable (R20-30/kg at retail) whitefish species alternatives. Marine cultivated tilapia along the Eastern Cape coastline using Biofloc Technology (BFT) – see image below – is aimed at import replacement targeting the affordable whitefish category in Southern Africa where projected supply shortfalls are in the
_	0 11 11 1 1 1	range 29,000 to 42,000 tonnes per annum by the early 2020's
5	Capital Value [R m]	To be determined by the Project Sponsor
6	Construction Start Date	To be determined by the Project Sponsor
7	Constructions Jobs p.a.	To be determined by the Project Sponsor
8	Operation Start Date	2020
9	Operating Costs p.a.	Approximately R 3 billion per annum by the year 2032
10	Operating Jobs p.a.	Approximately 4,700 jobs by the year 2032
11	Turnover or Value (GVA)	Approximately R 3.4 billion per annum by the year 2032 (100,000 tons of live weight marine tilapia)
12	Economic Linkages	An extensive value chain based on product flow from rural farmers through to processing, packaging and export.
13	'Lever' to 'Unlock'	
14	Any Other Points	



FT tilapia feeds are very close in specification an outh Africa at around US\$ 244/tonne (R3,300/ton ow does BFT grown tilapia compare to a broiler o utrient recovery efficiency and 3) feed cost per un	id cost to poultry broller rat ine). hicken production metrics, I it of edible meat yield?	ions (19-20% protein) in) in terms of feed use, 2)
Comparative feed use, nutrient recovery efficiency and feed cost per unit of edible meat yield in BFT grown tilapia vs. broiler chickens	BFT grown tilapia (SOOg fish)	Brollerchicken
Feed Conversion Ratio (FCR) =	1.0 : 1.0	1.79:1.0
Net Protein Recovery, %/edible yield =	49.5%	21%
Net Energy Recovery, %/edible yield =	28.2%	10%
Edible meat yield, % =	62.5%	46.1%
Feed cost, US\$/tonne =	U\$\$ 244.00/t	U\$\$ 244.00/t
Feed cost, US\$/kg edible meat yield =	US\$ 0.39/kg (8.5.27/kg)	US\$ 0.95/kg




8.1.4 Bid Book - Freshwater Catfish (Barble) - Karoo Catch

The Eastern Cape Ocean Economy high level profile and economic summary of this project is contained in the table hereafter.

|--|

#	LABEL	NARRATIVE	
1	Project Name	Freshwater Catfish Farming [Karoo Catch (Pty) Ltd]	
2	Project Location	Graaff-Reinet, Eastern Cape, South Africa	
3	Project Owner / Driver	Department of Environmental Affairs (DEA)	
4	Brief Project Overview [Nature or function, primary purpose, service or clients, rationale]	 Karoo Catch is a freshwater catfish aquaculture farm situated in Graaf Reinett the Eastern Cape. Following 10 years of research, development and piloting, the current intervention focuses on the establishment of a commercially viable business unit (incubator) and long-term support for development, expansion and replication, aiming to supplement staple diets, decrease import requirements and simultaneously create employment opportunities. To date the project has grown to commercialisation phase with 102 full-time employees from the local community. It has completed the building of three new tunnels, bringing the to production capacity to 120 tons per month; new farm and hatchery manageme were appointed and the construction of a large processing factory on site will I completed in January 2019. Karoo Catch has developed a range of consumer products which are nutritious fish based products for everyday consumption that are easy to prepare, these include 'fish wors', 'braai wors' and 'fish burgers' made from catfish mince 	
		inclusive of retail, wholesale, traders, and bulk markets.	
5	Capital Value [R m]	For one commercially viable unit: Investment required – R 180 million Capital budget – R 131 million per production unit	
6	Construction Start Date		
7	Constructions Jobs p.a.	To be supplied by the Project Sponsor,	
8	Operation Start Date	To be supplied by the Project Sponsor,	
9	Operating Costs p.a.	To be supplied by the Project Sponsor,	
10	Operating Jobs p.a.	2,358 total (direct, indirect and induced)	
11	Turnover or Value (GVA)	For one commercially viable unit: Annual turnover: R 277 million	



#	LABEL	NARRATIVE	
12	Economic Linkages	The primary aim of the project is to create sustainable self-employment of rural women and facilitate economic growth. This will be achieved through the establishment of aquaculture clusters, each consisting of a central management farm and a network of satellite farming systems.	
13	'Lever' to 'Unlock'		
14	Any Other Points	The project places high emphasis on the empowerment of rural communities, specifically women and youth and previously disadvantaged	
15	All images sourced from: https://www.karoo-catch.co.za		





8.1.3 N2 Wild Coast Biodiversity Offset Project

#	LABEL	NARRATIVE		
1	Project Name	N2 Wild Coast Biodiversity Offset		
2	Project Location	Wild Coast region (from uMtamvuna to uMzimvubu Rivers)		
3	Project Owner/Driver	Eastern Cape Parks and Tourism Agency		
4	Brief Project Overview (nature of the function, primary purpose, service or client's rationale)	As required by the Environmental Authorisation, in terms of the environment conservation act, 1989, The project aims to counterbalance any residual biodiversity loss associated to the N2 Wild Coast Highway after appropriate prevention and mitigation measures have been taken.		
5	Capital Value (R m)	R 373,881,852-00 investment value over 10 years.		
6	Construction Start Date	01 June 2018		
7	Construction Jobs (Per Annum)	To be determined after the project management have been completed, approximately in the year 2021.		
8	Operational Start Date To be determined after the project management have been com approximately in the year 2021.			
9 Operating Cost (Per Annum) Approximately R 15,000,00-00		Approximately R 15,000,00-00		
10	Operating Job (Per Annum)	To be determined after the project management have been completed, approximately in the year 2021.		
11	Turnover or Value (Gross Value Add)	To be determined after the project management have been completed, approximately in the year 2021.		
12	Economic Linkages	Determine small businesses for socio-economic beneficiation opportunities linked to the rehabilitation programme. High natural endowment of the Msikaba & Mthentu Gorges, Vulture Colony and Magwa Falls linked with the N2 Wild Coast Highway for tourism opportunities.		
13	"Lever" to "Unlock	Facilitate partnerships and investments required to achieve long-term sustainability of the offset-receiving sites by developing appropriate business plans where the applicable institutional and governance frameworks will support the sustainable operations.		









8.1.4 Mkambati Community Project Nature Reserve

#	LABEL	NARRATIVE	
1	Project Name	Mkambati Community Public Private Partnership	
2	Project Location	Mkambati Nature Reserve	
3	Project Owner/Driver	Colin Bell (Mkambati Matters)	
4	Brief Project Overview (nature of function, primary purpose, service or client's rationale)	The project is a partnership between Community (Mkambati Land Trust), Government (ECPTA) and Investor (Mkambati Matters) & is a 49 year lease. The purpose of the project for the local economic development which will provide jobs, capacity building and better livelihood through additional projects on the project rentals. This will be through Tourism facilities to be built which are the lodges and villas	
5	Capital Value (R m)	R200m	
6	Construction Start Date	August 2019	
7	Construction Jobs (p.a.)	110 jobs	
8	Operational Start Date	December 2020	
9	Operating Cost (p.a.)	± R5 million	
10	Operating Job (p.a.)	65 jobs	
11	Turnover or Value (Gross Value Add)	± R10 million	
12	Economic Linkages	N2 Toll Road, Wild Coast Development Initiatives, Operation Phakisa – Oceans Economy	
13	"Lever" to "Unlock	Additional funding commitment. Improvement of access roads to the reserve. Unlocking of other complimentary facilities and activities	





8.1.5 Coastal Infrastructure Development on Selected Beaches

#	LABEL	NARRATIVE	
1	Project Name	Coastal Infrastructure Development on selected beaches	
2	Project Location	Selected beaches, mainly on the eastern section of EC.	
3	Project Owner/Driver	Local Municipalities at KSD, Ngquza Hill, Port St Johns and Ndlambe respectively.	
4	Brief Project Overview (nature of function, primary purpose, service or client's rationale)	 The project seek to develop and upgrade the coastal infrastructure for selected beaches in order to enhance the tourism potential for the selected beaches as part of the legacy projects within the jurisdiction of the local municipalities (namely Mbizana, Port St Johns, Nyandeni & Ndlambe Local Municipalities respectively). The proposed infrastructure development projects includes: 6 day Eastern Cape hiking trail development project (hikers facilities at Hluleka, Mpande, Mngazana & Mngcibe sites) Infrastructure development at selected beaches in Port Alfred (i.e. Krantz recreational area, Middle beach facilities & Kowie river embarkment) Planning for beaches at Mbizana (i.e. Mzamba and Mthentu beaches) 	
5	Capital Value (R m)	R 21 million	
6	Construction Start Date	The project is awaiting the approval of project plans by National Department of Tourism.	
7	Construction Jobs (Per Annum)	Approximately 50 jobs	
8	Operational Start Date	Pending approval of project plans	
9	Operating Cost (Per Annum)	Not yet determined	
10	Operating Job (Per Annum)	Approximately 10 jobs	
11	Turnover or Value (Gross Value Add)	Not yet determined	
12	Economic Linkages	The proposed tourism infrastructure development at the selected beaches will enhance the tourism potential of the selected sites and which will in turn results in economic spin offs for these sites. The construction phase of these projects will results in creation of temporary job opportunities for locals and SMMEs development in these areas.	
13	"Lever" to "Unlock	Tourism potential of the coastal tourism infrastructure on the selected sites.	





8.1.6 N2 Wild Coast Toll Road (N2WCR)

#	LABEL	NARRATIVE	
1	Project Name	N2 Wild Coast Road (N2WCR)	
2	Project Location	Between East London and Port Edward – 410 km	
3	Project Owner / Driver	South African National Roads Agency Ltd (SANRAL)	
4	Brief Project Overview [Nature or function, primary purpose, service or clients, rationale]	 The N2WCR forms part of the Governments Strategic Integrated Projects (SIP-3: South-Eastern node and Corridor Development), whose key purpose is to serve as a catalyst for the economic growth of the Eastern Cape and KwaZulu-Natal. The brownfields portion entails multiple upgrades of the N2 between East London and Mtatha through to Port St Johns. The greenfield portion entails 112 kilometres of new alignment between Ndwalane (near PSJ) and the Mtamvuna River (near Mzamba), including two mega-bridge structures on the Msikaba and Mtentu Rivers, seven additional major river bridges and three interchange bridges, approximately 96 km of new class 1 road and 17 km of brownfields class 1 road. Once completed, the route will be approximately 85 km shorter than the current one and could be up to three hours faster – particularly for heavy freight 	
E	Conital Value [D m]	venicies.	
5			
7		Opgoing with SMME linkages	
8	Operation Start Date	2022	
9	Operating Costs p.a.	To be determined	
10	Operating Jobs p.a.	To be determined	
11	Turnover or Value (GVA)		
12	Economic Linkages	Both road and non-road users will benefit for decades to come from this project in a number of ways, including: the establishment of roadside enterprises such as service stations, food outlets, accommodation and tourist attractions; an increase in the value of real estate, expansion of water, electricity and telecommunications; savings of time and logistics costs; access to markets for agricultural producers, and a host of tourism opportunities.	
13	'Lever' to 'Unlock'	SANRAL currently implementing the project.	
14	Any Other Points	A large saving in road accidents and fatalities. Extensive tourism opportunities through providing safe access to pristine natu- ral areas.	











9 CONCLUSIONS AND RECOMMENDATIONS

Following on from this baseline study is a series of stakeholder engagement sessions to showcase the preliminary findings and start preparing the implementation plan in the form of a Project Bid Book, Road Map and strategy, to be presented at an investor's conference in September 2019.

This report also needs to identify a series of issues for further research.



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11 STAKEHOLDER ENGAGEMENT

11.1 EASTERN CAPE OCEAN ECONOMY STAKEHOLDERS FOR INTERVIEWS

NO.	NAME OF PERSON	ORGANISATION	INVITATION	EMAIL ADDRESS	PHONE NUMBER	MOBILE NO.
1	Theo Sethsotha	Transnet – TNPA, PoPE	11.04.19	theo.sethosa@transnet.net	(041) 507 1760	083 567 0796 082 393 4432
2	Rajesh Dana	Transnet – TNPA, PoPE	11.04.19	Rajesh.Dana@transnet.net	(041) 507 1710	083 287 4386
3	Siya Mhlaluka	Transnet – TPT, Ngqura	11.04.19	Siyabulela.mhlaluka@transnet. net	(041) 507 8201	083 282 9790
4	Akho Skenjana	DEDEAT	11.04.19	Akho.skenjana@gmail.com		060 564 6232
5	Alistair McMaster	DEDEAT	11.04.19	Alistair.McMaster@dedea.gov.za	(043) 737 4887	072 813 0063
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7	Dorelle Sapere	MBDA – Bayworld Project	11.04.19	dorelle.sapere@mbda.co.za	(041) 811 8210	083 447 6380
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9	Amelia Buchner	NMBM – Economic Devel.	11.04.19	abuchner@mandelametro.gov. za	(041) 503 7529	079 490 0748
10	Graham Taylor	Coega SEZ, CDC – GIS	11.04.19	graham.taylor@coega.co.za	(041) 403 0454	083 228 3055
11	Keith du Plessis	CDC, Agro & Aquaculture	11.04.19	keith.duplessis@coega.co.za	(041) 403 0400	082 740 7654
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13	Eldrid Uithaler	BCM Devel. Agency	11.04.19			072 745 9196
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15	Thandiswa George	BCM Municipality			(043) 705 1154	
16	Simphiwe Kondlo	EL SEZ, CEO	12.04.19	simphiwe@elidz.co.za	(043) 702 8200	083 303 4002
17	Ntobeko Bacela	EL SEZ, Agro. & Aqua.	12.04.19	ntobeko@elidz.co.za	(043) 702 8200	082 459 3412
18	Terry Taylor	EL Port	12.04.19	terryt@npa.co.za	(043) 700 1043	083 284 1786
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27	Prof Jenny Snowball	Rhodes University	15.04.19	J.Snowball@ru.ac.za	(046) 603 7405	
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11.2 STAKEHOLDER LETTER OF ENGAGEMENT AND STRUCTURED MEETING AGENDA

Derek Zimmerman & Associates

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COMPANY:	
FOR ATTENTION:	
EMAIL:	
TELEPHONE NUMBER:	
DATE:	Repeat – 18 May 2019
SUBJECT:	A Stakeholder Engagement Meeting to discuss the Current Situation and the Future Potential of the Ocean Economy.

Dear Eastern Cape Ocean Economy Stakeholder,

RE: A Stakeholder Engagement Meeting - Ocean Economy Potential.

We have been appointed by a Nelson Mandela University led task team, headed by Professor Derrick Swartz, to undertake a thorough review of both the national and Eastern Cape Ocean Economy. The purpose is to provide a current baseline or status quo assessment of the Ocean Economy, identify potential projects for consideration, and provide a cogent 'Road Map' of how to implement these projects.

Inherent in such an analysis is a review of all of the existing 'Ocean Economy' projects and infrastructure, the projects that are planned or being considered and those projects that are in the process of being implemented. This needs to be undertaken within the context of the current understanding of the Ocean Economy as enunciated by Operation Phakisa, which was conceived during 2014 and is an initiative of the South African government to fast track the implementation of solutions on critical development issues.



The six laboratory streams and two enablers of Operation Phakisa are highlighted in the following graphic:

	OCEANS ECONOMY FOCUS AREAS AND ENABLERS				
3	Marine Transport and Manufacturing	It is estimated that the oceans economy has			
	Offshore Oil and Gas Exploration	the potential to			
Ō	Aquaculture	contribute up to R177 billion to Gross			
0	Marine Protection Services and Ocean Governance	Domestic Product			
6	Small Harbours Development	(Compared to R54			
3	Coastal and Marine Tourism	billion in 2010) and create approximately 1			
0	Skills Development and Capacity Building	million jobs (compared			
	Research, Technology and Innovation	to 316 000 in 2010).			

Only limited work has been undertaken to bring Operation Phakisa to a provincial level, and the aim of this study is to bring the Operation Phakisa Ocean Economy to a 2018 level for the national economy, and then to contextualise the Eastern Cape Ocean Economy within this framework, or a new framework still to be enunciated through this process.

We are requesting an opportunity to meet with you and any of your colleagues or staff whom you believe could either assist us in this process, or gain valuable information in return as we progress and provide feedback, and to participate in a structured interview in terms of the agenda provided hereafter.

We would request that you consider the agenda items provided on the following pages, and strive to assist us in addressing these by advancing your thoughts on these issues during our meeting, and providing documentary or electronic media support for your responses and input wherever possible. We would like to record these discussions and as accurately as possible.

Please provide us with two times and venues of your choice during the periods from 16 April 2019 through to 31 May 2019. We believe we would need an hour and a half of your valuable time.

Thanking you in advance, and we look forward to engaging with you in this exciting project, with real economic potential for our province.

Yours sincerely,

Derek Zimmerman Lead Consultant, Eastern Cape Oceans Economy Baseline Study.



Meeting Agenda:-

Eastern Cape Oceans Economy - The Current Situation and Future Potential

- 1. What do you understand by the concept of an 'Ocean Economy' (OE)?
 - a. Is the OE geographically bounded, or does it reside in certain value chains?
 - b. Which industries currently dominate the OE nationally and in the EC,
 - c. Which industries have the largest potential for GDP and employment impact?
 - d. Has Operation Phakisa correctly captured the concept of the OE in South Africa?
- 2. The current OE within your organization or sphere of influence:
 - a. What is your current annual footprint within the OE space by way of installed capacity or infrastructure, annual turnover, GDP impact and employment?
 - b. Are you currently implementing any OE related projects, and what are their economic metrics?
 - c. What projects do you have which are currently either being considered or in the planning phase for the OE in the EC?
- 3. Projects or initiatives that should be considered for EC implementation:
 - a. From your knowledge and experience, which projects or concepts do you believe should be considered for implementation in the EC 0E?
 - b. What is the fundamental reason or rationale for the project?
 - c. What are the economic parameters of the project, CAPEX, OPEX, GDP, Jobs etc.?
 - d. Who should we speak to in order to get further information on the project?
- 4. What would an Eastern Cape Ocean Economy 'Road Map' look like?
 - a. Would it be a snaking string of hubs and projects along the coastline?
 - b. Would it include 'Maritime Clusters' from other regions, countries, and even continents?
 - c. Would it concentrate on the evaluation of existing and potential 'Value Chains'?
- 5. Which are the entities or institutions which should be driving the EC OE:
 - a. The private sector because they are profit driven?
 - b. National, Provincial and Local Government, providing support and enablers?
 - c. The Quadruple Helix model which includes the above, together with Academia and Civil Society?
 - d. What would be the most efficient entity and programme to drive the EC OE?
- 6. How could you or your organization assist with driving and capacitating the EC OE?
- 7. What other issues should we be considering during our research?
- 8. Are there any other issues you would like to raise or discuss?



Impressions of the Oceans Economy





Blue Economy Protection (e.g., MPAs) Research and Development Restoration Capacity development Investment and financing Investment and financing Ecosystem Based Management Maritime security Ecosystem services Impact abatement/mitigation Sustainable Development Goals Marine Spatial Planning Income diversification Maritime clusters

Poverty alleviation
Oceans as livelihoods

Food security

Oceans as natural capital

Oceans as good business

Blue Growth / resource utilisation

Employment

Oceans as a driver of innovation

Figure 1: A Blue Economy matrix illustrating related terms and concepts





12 APPENDIX

12.1 THE BRIEF AND CLIENT REQUIREMENT

The Scope Of Work (SOW) for the Eastern Cape Ocean Economy Baseline Study and this brief is seen as having three phases over twelve months as follows:

- 1. Pre-summit phase [Status Quo, Baseline for National & EC Ocean Economy, 'Package of Projects' for 'Bottom-Up' approach; economic value in GDP, Jobs, Capex & Opex]
- 2. EC OE Summit August 2019 [Oscar Mabuyane MEC, showcase 10 OE Projects]
- 3. Research Outputs for OE and OE Projects in 'Bid Book' format, with a 'Road Map'.

This requires a thorough analysis of the South African National economy in the context of the Ocean Economy potential over an agreed to timeframe (twenty years to match Operation Phakisa timelines), and then to extrapolate the Eastern Cape provincial economy and Ocean Economy from this baseline and produce a 'Road Map' for EC OE implementation.

A parallel process requires research on certain of the relevant EC OE Projects.

Table 58: Proposed Scope of Work & Deliverables for the Eastern Cape Ocean Economy

#	REQUIREMENT	DELIVERABLE		
1	Undertake a 'Status Quo Assessment' of all relevant EC OE documents, reports etc. Undertake field trips, interviews and questionnaires to gather information.	 Engage all relevant stakeholders, Compile & collate into a 'Resource Book', Revise or provide precise SOW for this project. 		
2	Evaluate the 'Status Quo' Assessment data of the OE assets of the EC and compile an OE Resource Profile or 'Project Baseline'. Compile a 'Bottom-Up' project book of the key economic value of each EC OE project. Produce an initial 'Road Map' of a potential path to follow in evaluating the EC OE. [Complete by: Mid-April 2019]	 Produce an Eastern Cape Ocean Economy compendium of data which would essentially be a 'Project Baseline' containing all of the past, current and future or potential EC OE projects. Provide a high level overview of each to reflect anticipated or actual Capex, Opex, Funding & Job creation along the value chain. Prepare a high level initial project 'Road Map'. 		
3	The South African 'Ocean Economy' needs to be profiled in the context of global and national trends, together with the Operation Phakisa employment and Gross Domestic Product (GDP) profile as contained in their strategy documentation, and updated with the latest 2015 and 2017 Stephen Hoskings et al Ocean Economy sectors overview and GDP metrics. [Complete: End May 2019]	 The following SA 'Ocean Economy' sectors need to be profiled for main intent, FTE Jobs and GDP:- Marine Transport & Manufacturing, Offshore Oil & Gas, Aquaculture and Fisheries, Marine protection services & ocean govern., Small harbours development, Coastal & Marine Tourism. Enablers: Skills and R&D 		



#	REQUIREMENT	DELIVERABLE
4	Prepare a realistic South African macro-economy GDP Forecast and then a South African 'Ocean Economy' Forecast over the next 20-years to indicate the extent of GDP in the sectors and the jobs anticipated, from 2018 [Complete by: End May 2019]	 The SA GDP forecast to include annual SA economic detail as follows:- A 20-year SA macro-economic forecast of GDP, The 2015 OE 'Baseline' for jobs and GDP, A 20-year OE macro-economic forecast, The underlying assumptions used.
5	The Eastern Cape 'Ocean Economy' needs to be profiled in the context of national trends, in the context of the prevailing economic factors in the EC as at 2015 for the 'EC OE Baseline', and as at 2018 for the OE forecast. Produce a 'Road Map' of the path to follow:	 The EC GDP forecast to include annual detail for the Eastern Cape economy:- A 20-year EC provincial economic forecast, The 2015 EC OE 'Baseline' for jobs and GDP, A 20-year EC OE macro-economic forecast, The underlying assumptions used.
6	High level Economic Impact Assessment (EIA) to gauge priority projects for pursuit by both the Public and Private sector. [Complete: End June 2019]	 EIA indicators for GDP, Jobs & Funding, Indicators Value Chain, Direct, Indirect, Induced impacts for GDP & Jobs, and Provincial, National & International impact.
7	Parallel Work-stream: Assist with the 'Research Projects' to support this EC OE program. [Complete: End May 2019]	 Undertake data gap analysis on 'Status Quo', Highlight gaps uncovered in GDP forecasts, Draft 'Research Proposal' briefs. Appoint competent researchers to implement.
8	Baseline Report and Road Map	• A concise overview of the study findings.



12.1.1 The Approach and Assessment Methodology Proposed

The study needs to undertake a thorough analysis of the most current and reliable work on the topic to establish a baseline of information. The study will then construct a macro-economic model to establish trends and future requirements, and analyse the existing Eastern Cape Ocean Economy projects and initiatives completed, underway, or planned.

This sequential process is indicated graphically in the figure below:

Figure 13: Methodological Approach for the Eastern Cape Ocean Economy Study





12.1.2 Methodology Adopted to Address the Brief

A high level overview of the methodology adopted is as follows:

- 1. Define the Ocean Economy adequately in order to be able to properly understand the context of the study from a global perspective,
- 2. Review the reports and all work that has been undertaken or is underway within the Ocean Economy space in the form of a Status Quo Assessment,
- 3. Evaluate the status quo assessment data an information in order to produce a holistic overview of the OE resources in the province and begin to formulate a 'Project Book' with all the projects analysed and recorder,
- 4. Provide a cogent overview of the South African economy in the context of the primary and secondary manufacturing sectors, together with an analysis of the sectors that are deemed to be 'Ocean Economy' related. This analysis to investigate the trends over the past ten years and provide a forward project for twenty years.
- 5. Provide a cogent overview of the Eastern Cape economy in the context of the primary and secondary manufacturing sectors, together with an analysis of the sectors that are deemed to be 'Ocean Economy' related. This analysis to investigate the trends over the past ten years and provide a forward project for twenty years.
- 6. Analyse all of the data collected in the context of these ocean economy forward projections and begin to formulate an "Oceans Economy Road Map' to provide structure and form to a strategy which can be effectively implemented for the Eastern Cape.
- 7. Prepare a series of research agenda's to be undertaken by post graduate students from the Provinces various universities, such research to complement and corroborate the main work of this study process.
- 8. Conclude with a professional document which provides a cogent overview of all of the issues, a 'Project Book' of OE projects which are ready for implementation, an Ocean Economy Road Map, stakeholders, roles and responsibilities, timelines and deliverables.

All of the above work streams need to be undertaken in collaboration with the client, NMU and any other appointed professionals within the project team, to produce a comprehensive report which will provide for a full and proper understanding of the Ocean Economy within the Eastern Cape.



12.2 DEFINING THE OCEAN ECONOMY

In order to undertake this study in a manner which allows for meaningful comparison with other provinces, countries and continents, it is vital to have a clear understanding of what the Ocean Economy is, its sectors and sub-sectors, it economic linkages, upstream and downstream activities, clusters and partners, and the general functioning of the Ocean Economy.

The sectoral scope of the ocean economy varies considerably by country and the number of categories chosen can range from six, as in the case of the United States, to 33 in the case of Japan. Some industries may be excluded from the ocean economy in one country but not in another. Moreover, there are significant differences among countries in the delineation of the classifications and categories used. Internationally agreed definitions and statistical terminology for ocean-based activities do not yet exist

In order to arrive at a clear and representative definition of the Ocean Economy a literature review has been undertaken of a few papers and articles which we deemed to be of value. These are summarised in the following sections and then a synthesis is provided which encapsulated our understanding of the Ocean Economy and the basis upon which it has been evaluated throughout this report.

12.2.1 OECD - Ocean Economy - 2016

The Organisation for Economic Cooperation and Development (OECD) open their discussion on the potential of the Ocean Economy by saying; 'For many, the ocean is the new economic frontier. It holds the promise of immense resource wealth and great potential for boosting economic growth, employment and innovation. And it is increasingly recognised as indispensable for addressing many of the global challenges facing the planet in the decades to come, from world food security and climate change to the provision of energy, natural resources and improved medical care.' (OECD, 2016)

An important element of this statement is the recognition of the finite natural assets upon which the Ocean Economy is based and reliant, and the fact that they are closely linked and supportive of one another.

'The ocean economy encompasses ocean-based industries (such as shipping, fishing, offshore wind, marine biotechnology), but also the natural assets and ecosystem services that the ocean provides (fish, shipping lanes, CO2 absorption and the like). As the two are inextricably inter-linked, this report addresses many aspects of ecosystem services and ecosystem-based management all the while focusing on the ocean-industry dimension.' (DECD, 2016)

The report puts forward a working definition of the ocean economy, which encompasses not only the ocean-based industries but also the natural assets and ecosystem services that the ocean provides, as well as going further and providing estimates of Gross Value Added (GVA) as a proxy for economic activity, together with the employment opportunities created and there future potential, with the baseline being 2010 together with a future projection of twenty years to 2030.



The main focus of the report is the economic development of the ocean and the future evolution of the current and emerging ocean-based industries and activities. These industries have been framed as follows:

'established ocean activities encompass shipping, shipbuilding and marine equipment, capture fisheries and fish processing, maritime and coastal tourism, conventional offshore oil and gas exploration and production, dredging, and port facilities and handling. Emerging ocean-based industries and activities are characterised by the key role played by cutting-edge science and technology in their operations. They include: offshore wind, tidal and wave energy; offshore extraction of oil and gas in deep-sea and other extreme locations; seabed mining for metals and minerals; marine aquaculture; marine biotechnology; ocean monitoring, control and surveillance. Looking further to the future, there are fledgling or, as yet, "unborn" industries which could potentially join this category. Examples are carbon capture and storage (CCS) and the management of ocean scale protected areas.' (OECD, 2016)

This is a fairly broad definition of the Ocean Economy and it includes elements of what other reports and authors term the 'Blue Economy', which tends to speak more to ocean energy and carbon capture, as well as the sustainability of maritime or ocean resources.

The Ocean Economy is seen as a cluster of interconnected industries:-

'Ocean industries are not developing in isolation, neither from one another nor from the ocean environment of which they are part. On the contrary, they interrelate and interact with other activities and their ocean surrounds in a myriad of different ways. But as long as maritime industries and the exploitation of marine resources are perceived as individual and separate activities, approaches to their development and their sustainable management risk remaining piecemeal and limited in their effectiveness.' (OECD, 2016)

The report notes that terminology relating to the ocean economy is used differently around the world, and that commonly used terms include: ocean industry, marine economy, marine industry, marine activity, maritime economy and maritime sector. Besides the terminology, there is also no universally accepted definition of the ocean economy.

The OECD report considers that any definition of the ocean economy is incomplete unless it also encompasses nonquantifiable natural stocks and non-market goods and services. In other words, the ocean economy can be defined as the sum of the economic activities of ocean-based industries, and the assets, goods and services of marine ecosystems.

This is represented graphically in the following figure:

Figure 14: The OECD Concept of the Ocean Economy



Source: Organisation for Economic Cooperation and Development (OECD), 2016. The Ocean Economy in 2030, OECD Publishing, Paris.



The figure above summarises this concept, with ocean-based industries divided into market flows and services and physical capital stock of the industries. Marine ecosystems represent natural capital and non-market flows and services.

'In many cases, marine ecosystems provide intermediate inputs to the ocean-based industries. An example is coral reefs. They provide shelter and habitat for fish nurseries and unique genetic resources, while at the same time providing recreational value for maritime tourism. Conversely, ocean industries can impact the health of marine ecosystems, e.g. through discharge of ship waste or pollution from oil spills.' (OECD, 2016)

The OECD report proposes the following scope as encapsulated in the table below, for categorising established and emerging ocean-based activities, bearing in mind the broad overlaps that exist in the various definitions of the Ocean Economy, and the existence of highly dynamic emerging activities within traditional ocean industries.

Table 59: Established and Emerging Ocean Based Industries - OECD 2016

ESTABLISHED	EMERGING
Capture fisheries	
Seafood processing	Marine aquaculture
Shipping	Deep- and ultra-deep water oil and gas
Ports	Offshore wind energy
Shipbuilding and repair	Ocean renewable energy
Offshore oil and gas (shallow water)	Marine and seabed mining
Marine manufacturing and construction	Maritime safety and surveillance
Maritime and coastal tourism	Marine biotechnology
Marine business services	High-tech marine products and services
Marine R&D and education	Others
Dredging	

Source: OECD), 2016. The Ocean Economy in 2030, OECD Publishing, Paris.

The ocean economy of the next twenty years or so is being driven primarily by developments in global population, the economy, food security, energy requirements, climate and environment, technology, and ocean regulation and management.

Extensive economic modelling has been undertaken and the combined global Ocean Economy has been estimated as follows:

12.2.2 Social Licence to Operate and the Blue Economy

There is an increasing trend in business and economics to consider the long-term impacts of human activities on the environment and natural assets. Generally the 'Blue Economy' has been found to be well equipped to deal with the technical and technological challenges of managing tangible impacts of commercial activity, particularly environmental risks through research, innovation and appropriate mitigation practices.



A more challenging dimension is the less tangible social and cultural element of ocean resources exploitation which relates to values, beliefs, customs and ideologies of societies and communities. These issues often take on political dimensions as different societies may have conflicting views on marine based commercial activity and their long-term impacts.

'The Blue Economy is an ocean based economic growth model designed to ensure sustainable use of the marine environment. It includes 'traditional' offshore activities (e.g. oil and gas development, shipping, fisheries) and emerging industries such as deep sea mining and renewable energy. The social acceptability of ocean based industries, sometimes known as 'social license to operate' (SLO), will be important to securing the future potential of a Blue Economy. Whilst maintaining a SLO is a challenge that is experienced differentially across various sectors, the loss of SLO in one sector may impact the level of societal trust in the broader concept of a Blue Economy.' (Voyer et al, 2018)

Central to the debate is the definition of the Ocean Economy from the broad to the narrow sense, and what constitutes the 'Blue Economy' in this context. The World Ocean Council has adapted an Ocean Economy definition used by The Economist in 2015 as follows:

'While a universal definition of the Blue Economy is yet to be agreed, it is based upon the core principles of Sustainable Development. It recognises the multiple benefits of marine and coastal ecosystems for current and future generations and the need for sustainable use and development of these resources. This focus on sustainability and ocean health distinguishes the Blue Economy from the broader 'ocean economy'. The ocean economy (also sometimes called the marine economy) refers to 'that portion of the economy which relies on the ocean as an input to the production process or which, by virtue of geographic location, takes place on or under the ocean' (Kildow and McIlgorm, 2010 p368). The ocean economy therefore includes a wide variety of sectors as outlined in Table 1 (Kildow and McIlgorm, 2010, McIlgorm, 2005, The Economist, 2015).' (Voyer et al, 2018)



EXTRACTION OF NON-LIVING RESOURCES, OR RESOURCE GENERATION	HARVESTING OF LIVING RESOURCES	COMMERCE AND TRADE IN AND AROUND THE OCEAN	ECOSYSTEM PROTECTION AND MANAGEMENT
Seabed/ Deep seabed mining	Fisheries	Shipping (marine transportation)	Blue Carbon
Oil and Gas	Aquaculture	Shipbuilding and repair	Surveillance and maritime security
Water (desalinization)	Marine bio-technology	Marine construction (e.g. jetties etc.)	Habitat protection/ restoration
Dredging	Recreational fishing and boa	ating	Hazard protection
Energy/renewables (tidal/ wave energy; coastal/ offshore wind)	Seafood processing	Port infrastructure and services	Ecological/ ecosystem research
		Marine services (e.g. mapping, monitoring, consulting, maritime insurance, etc.)	Waste treatment and disposal
		Marine education and R&D	
		Coastal Development	
		Marine & coastal tourism	
		Defence	

Table 60: Sectors That Contribute to the Ocean Economy (Adapted: Economist, 2015)

Source: Voyer, M. & van Leeuwen J. (2018). Social License to Operate and the Blue Economy. Report to World Ocean Council. Australian National Centre for Ocean Resources and Security, Wollongong, Australia. Adapted from The Economist, 2015.

The Blue Economy is often seen as a subset of this broader ocean economy which incorporates ideas that are designed to 'green' existing marine industries such as fisheries, aquaculture, shipping, ports and marine tourism. It also embraces new and emerging sustainable industries such as wind and wave power, and payment for ecosystems services like Blue Carbon.



12.2.3 The Blue Economy in Australia - 2017

This report deals with the distinction between the Blue Economy and the Ocean Economy and as a first stage divides the Blue Economy up into the following dominant themes or components for the purpose of evaluating the sub-themes and activities that reside within each component. Five overarching themes or components were identified as follows:

Figure 15: Key Themes and Sub-themes within Australian Blue Economy Literature

	COMPONENTS OF THE BLUE ECONOMY				
	ECONOMIC GROWTH AND DEVELOPMENT	ENVIRONMENTAL SUSTAINABILITY	SOCIAL CONSIDERATIONS	GOVERNANCE AND INSTITUTIONAL MECHANISMS	TECHNICAL CAPACITY
Sub- themes	Blue Growth	Impact management	Food security	Coordination/ integration	Innovation
	Resource	·	Equity	•	Maritime security
	utilisation/	Climate change		Links with	Investment and
	sectors/growth strategies	mitigation	Inclusiveness	Sustainable Development Goals	financing
	Ū	Ecosystem	Poverty alleviation	(SDGs) and other	Research and
	Employment	protection	Wellbeing	conventions	Development
	Livelihoods	Ecosystem restoration	Community engagement	Marine Spatial Planning	Private sector engagement
	Maritime clusters		00	0	0.0
		Ecosystem	Capacity	Ecosystem Based	
	Income diversification	services	development	Management	
				MPAs	

Source: Voyer M. et al, 2017. (Commonwealth of Australia) The Blue Economy in Australia.

The second phase employed an ocean economy cluster analysis in order to identify how a theme was employed in relation to other concepts or ideas, which then went on to identify four main clusters of economic activity within the 'Blue Economy. These are seen as being:

- 1. Oceans as natural capital, [Environmental protection and restoration]
- 2. Oceans as livelihoods, [Food security and poverty alleviation]
- 3. Oceans as good business, [Strategies for growth in sustainable resources] and
- 4. Oceans as drivers of innovation. [R & D, Investment and innovative financing]



The figure below contains a matrix that highlights how the four identified clusters interact with one another, and can be viewed in the context of the sub-themes identified in the previous table.



Figure 16: A Blue Economy Matrix Illustrating Related Terms and Concepts

Source: Voyer M. et al, 2017. (Commonwealth of Australia) The Blue Economy in Australia.

12.2.4 Practical Manifestations of the Blue Economy for Sustainability

The four main clusters in relation to the underlying Blue Economy themes provides the context in which the sustainability concept needs to be emphasised in order to preserve the ocean and its resources for future generations and specifically in terms of the Sustainable Development Goals (SDGs) as determined by the United Nations.

After the analysis was conducted of existing Blue Economy activities, a range of programs and tools were identified together with the actors and programs required in order to implement meaningful and sustainable use of ocean resources. The findings of these practical manifestations of the Blue Economy for sustainability are summarised in the following table:

	OCEANS AS NATURAL CAPITAL	OCEANS AS LIVELIHOODS	OCEANS AS GOOD BUSINESS	OCEANS AS A DRIVER OF INNOVATION
Primary objectives	Ecosystem protection and/ or restoration	Poverty alleviation and food security	Economic growth and employment	Technological or technical advances
Actors	Conservation agencies / NGOs	Development agencies, SIDS, Small Scale Fisheries	Industry, larger global economies (EU, OECD, China, etc.)	Academic Institutes, Industry, and Government
Sectors	Carbon intensive industries (e.g. oil and gas) excluded. Focus on economic benefits from conservation (e.g. eco-tourism and MPAs, Payment for Ecosystem Services. Blue Carbon, etc)	Primary focus on SSF/ eco-tourism with aspirations for diversification, especially aquaculture	All sectors included but primary focus on large multi-national corporations and sectors (e.g. shipping, oil and gas, renewables, etc.)	All sectors but particularly emerging industries like renewables , biotechnology, and deep sea mining
Scale	Small scale, locally based	Small scale, locally based	Global/ regional and national	Sub-national districts or provinces
Tools	MPAs, Ecosystem Based Management	Community managed fisheries/ MPAs, Marine Spatial Planning, Ecosystem Based Management	Marine Spatial Planning, economic valuation studies, targeted investment and growth strategies	Innovation hubs/ research institutes, innovation 'challenges' or competitions, investment/ financing strategies

Table 61: Practical Manifestations of the Blue Economy for Sustainability

Source: Voyer M. et al, 2017. (Commonwealth of Australia) The Blue Economy in Australia.



12.2.5 Maritime Sector Skills Development Study - SAMSA (2011)

The South African Maritime Safety Authority (SAMSA), is an agency of government which is pursuing a growth strategy that prioritises the development and retention of quality critical and scarce skills within the maritime sector. An evaluation and definition of the maritime sector was required in order to address skills shortages.

Deloitte was appointed by SAMSA to conduct a Maritime Industry Skills Study, which would contribute to SAMSA's informed efforts to strategically position the maritime industry as a key economic sector. The study was to conduct a review of the maritime sector in South Africa, to explore trends in supply and demand in the maritime industry, to explore policies and funding mechanisms that relate to skills development, to determine the number and types of skills available in South Africa and to determine the skills offerings and development gaps in South Africa. The study noted that the industry generally does not have current data and numbers on skills supply and demand, and that where data is available it is fragmented. (This observation applies to the current study as well.)

Based on the data emerging from their research study, the maritime sector was divided into seven clusters, representing sub-sectors of the maritime sector. The maritime sector model distinguishes between three primary and four secondary industry clusters. The three primary industry clusters include all those maritime industries that represent the economic foundation of the sector: (1) shipping and transport, which is broken down into maritime logistics infrastructure, shipping transport and ports, marine services and coastal administration; (2) marine resources, which is broken down into fisheries, pharmaceuticals and aquaculture; as well as off-shore energy and mining; and (3) marine tourism, which is broken down into boating and cruising, sports and recreation and leisure.

The report states that a comprehensive skills development strategy for the maritime sector would need to incorporate skills development requirements in all seven clusters. The three primary industries are each equally important for growth of South Africa's maritime sector. The study has revealed the need for additional research focused on each of the primary industries to better understand the skills supply and demand dynamics and accurately determine the number of skills required so as to better inform the maritime skills development strategy. It was found that for each industry the key challenge is the gap in middle-management and supervisory skills and each industry has emphasised the gap between schooling / formal training structures and what is being demanded in the workplace.

The study has analysed the social context within which the maritime sector finds itself, trends influencing maritime skills, legal and policy frameworks governing the maritime industry, funding mechanisms and collaborative partnerships, undertaken a 'SWOT' analysis and the formulated a set of conclusions and recommendations.

Once an understanding of the maritime sector footprint was provided and the Maritime Sector Skills Development Model was refined by SAMSA, a second survey was conducted with companies identified within each sector that are regarded as providing significant maritime skills and employees.

Sixteen companies were purposively sampled and contacted telephonically to ask about numbers within the company. Documentary evidence provided further insights on numbers (annual reports reviewed).

The table alongside indicates that the total employment within the South African Maritime Sector is estimated at 116,364. It is noted that this number is indicative since organisations and companies contacted were purposively sampled because of their eminence within the Sector.



Limitations exist in that there may be substantially more companies within each maritime cluster/industry that have not been included since at the time of the study there was not a database of every company within the maritime sector in South Africa.

CLUSTERS & INDUS- TRIES	TOTAL EMPLOYMENT	COMPANIES INCLUDED IN THE SURVEY
Shipping	61,912	 Companies Included: South African Association of Shipping Operators and Agencies National Ports Authority Transnet Ports Terminals Transnet Freight Rail
Marine Resources	29,442	 Companies Included: Food and Agriculture Organisation Petro SA Forest Oil Pioneer Engineering South African Oil and Gas Alliance
Marine Tourism	2,372	 Companies Included: Department of Tourism Cruise Tourism Study Diving Companies
Operational Logistics	1,013	Companies Included: South African Association of Shipping Operators and Agencies
Manufacturing	13,700	Companies Included: Cape Town Boatbuilding and Technology Initiative Marine Technologies
Business Services	113	Companies Included: Private Training Providers
Public Services	7,812	Companies Included: • SAMSA • Department of Transport • Petroleum Agency South Africa • Ports Regulator • South African Navy • TETA • UCT • DUT • CPUT
TOTAL EMPLOYMENT	116,364	

Table 62: SAMSA / Deloitte Employment Estimate for the SA Marine Economy

Source: SAMSA and Deloitte, 2011. Maritime Sector Skills Development Study.



12.3 OCEAN ECONOMY FORECAST FOR SA - ASSUMPTIONS USED

12.3.1 OECD's Forecast Methodology & Metrics

The Organisation for Economic Co-operation and Development (OECD) is an international organisation that works to build better policies for better lives.

Global Value Added (GVA) in the ocean economy in 2030 (in constant 2010 USD) is estimated to grow to more than USD 3 trillion, thereby maintaining its 2.5% share of total world GVA (estimated at USD 120 billion GVA in 2030). Maritime and coastal tourism, including the cruise industry, is expected to take the largest share (26%), followed by offshore oil and gas exploration and production with 22% and port activities with 16%. In 2030, the ocean-based industries in the business-as-usual scenario are anticipated to employ more than 40 million, representing more than 1% of the global workforce of around 3.8 billion people (including part-time, self-employed and unemployed people).

A majority would be working in the industrial capture fisheries sector and maritime and coastal tourism industry. More than half of the ocean-based industries are projected to see their value-added rise more quickly than that of the global economy. Almost all of these industries would see employment growth outpace that in the world economy as a whole.

The business-as-usual scenario, or baseline scenario, assumes a continuation of past trends, no major policy changes, no abrupt technological or environmental developments, and no major shocks or surprises. Value added and employment growth in the ocean-based industries continue to progress along the same trajectory as in the past reference period.

The report emphasises from the outset that the scenarios are not forecasts, and that they are projections whose purpose is to explore how ocean-based industries might evolve in the next couple of decades on the basis of a set of underlying assumptions, such as economic growth, environmental degradation and technological innovation. The scenarios have been established to provide insights into the possible prospects for growth and employment in ocean industries, and to help identify likely upcoming issues and challenges, for example, the potential impact of rapid growth of ocean industries on the ocean environment, its consequences for the use of maritime space and implications for ocean spatial management.

The table below summarises the results of the business-as-usual projections. It compares rates of change of value added and employment in ocean-based industries between 2010 and 2030. The compound annual growth rate for value added of the ocean-based industries combined between 2010 and 2030 is estimated at 3.45%, broadly in line with the anticipated compound annual growth rate for value added of the global economy.

However, the total growth of employment (approximately 30%) in the ocean-based industries over the 20-year period is expected to outpace markedly the overall growth rate of the global workforce (approximately 20%).



INDUSTRY	COMPOUND ANNUAL GROWTH RATE FOR GVA BETWEEN 2010 AND 2030	TOTAL CHANGE IN GVA BETWEEN 2010 AND 2030	TOTAL CHANGE IN EMPLOYMENT BETWEEN 2010 AND 2030
Industrial marine aquaculture	5.69%	303%	152%
Industrial capture fisheries	4.10%	223%	94%
Industrial fish processing	6.26%	337%	206%
Maritime and coastal tourism	3.51%	199%	122%
Offshore oil and gas	1.17%	126%	126%
Offshore wind	24.52%	8 037%	1 257%
Port activities	4.58%	245%	245%
Shipbuilding and repair	2.93%	178%	124%
Maritime equipment	2.93%	178%	124%
Shipping	1.80%	143%	130%
Average of total			
ocean-based industries	3.45%	197%	130%
Global economy between			
2010 and 2030	3.64%	204%	120%1

Table 63: Overview of Estimates of Industry-specific growth rates in GVA & Employment

1. Based on projections of the global workforce, extrapolated with the UN medium fertility rate.

Source: OECD, 2016. The Ocean Economy. Authors' calculations based on OECD STAN, UNIDO INDSTAT, UNSD; Lloyd's Register Group (2014; 2013); World Bank (2013); IEA (2014); FAO (2015).

Global value added in the ocean economy in 2030 is estimated to grow to more than USD 3 trillion (in constant 2010 USD), maintaining its share of 2.5% of total global GVA(estimated at USD 120 billion for 2030). The sectoral shares of this growth are indicated in the figure below:





Figure 19: Value Add of the Ocean Economy in 2030 - Business as Usual

Source: OECD, 2016. The Ocean Economy. Authors' calculations based on OECD STAN, UNIDO INDSTAT, UNSD; Lloyd's Register Group (2014; 2013); World Bank (2013); IEA (2014); FAO (2015).



Based upon this analysis an employment profile has been created with the base year in 2010 and extrapolated to 2030. This data is illustrated in the table below, with a ranking indicating that industrial scale fish capture remains the top employer. Employment in the Ocean Economy is seen to rise by 9 million from the current 31 million to in excess of 40 million.

Table 64: OECD Global Ocean Economy Employment Estimates

Maritime Industry	Employment		Total	
Sector Contributions	2010	2030	%	
Industrial capture fisheries	10.976.414	10.305.489	25.4%	
Maritime and coastal tourism	6,958,000	8,520,000	21.0%	
Fish processing	2,399,200	4,945,930	12.2%	
Port activities	1,737,000	4,255,650	10.5%	
Industrial marine aquaculture	2,076,104	3,165,669	7.8%	
Maritime equipment	2,144,567	2,659,503	6.6%	
Shipbuilding and repair	1,875,026	2,325,243	5.7%	
Offshore oil and gas	1,840,406	2,316,170	5.7%	
Shipping	1,193,272	1,546,477	3.8%	
Offshore wind	37,756	474,740	1.2%	
Totals	31,237,745	40,514,871	100%	
Source: Organization for Feanamia Comparation and Development (OFCD) 2016				

Source: Organisation for Economic Co-operation and Development (OECD), 2016.

On a similar basis the Gross Value Added (GVA) for the Ocean Economy has been extrapolated from the USD 1,501 billion in 2010 to USD 2,960 billion in 2030.

Table 65 OECD Globa	Ocean Econom	y GVA Estimates
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Maritime Industry	Gross Value	Total	
Sector Contributions	2010	2030	%
Maritime and coastal tourism	390,107,246,153	777,138,485,595	26.2%
Offshore oil and gas	504,034,800,805	636,089,807,812	21.5%
Port activities	193,000,000,000	472,850,000,000	16.0%
Maritime equipment	168,034,658,400	299,674,237,328	10.1%
Fish processing	78,806,980,720	265,601,462,945	9.0%
Offshore wind	2,867,787,104	230,472,860,260	7.8%
Water transport	82,594,084,254	118,023,313,343	4.0%
Shipbuilding and repair	57,693,008,821	102,890,133,394	3.5%
Indutrial capture fisheries	21,081,783,838	47,048,622,903	1.6%
Industrial marine aquaculture	3,627,080,903	10,964,638,511	0.4%
Totals	1,501,847,430,997	2,960,753,562,090	100.0%

Source: Organisation for Economic Co-operation and Development (OECD), 2016.


12.3.2 Stephen Hosking's Forecast Methodology & Metrics - 2014

This research has formulated an important methodology for the defining of the South African Ocean Economy in a manner which is both logical and accurate. The abstract to the paper summarises the process as follows:

'The contribution of the ocean sector in South Africa is of interest to many – from researchers of ocean resources and environments to firms using the ocean and government departments and non-governmental organizations with interest in, or responsibility for, the ocean resources and environment. For the purpose of identifying the overall economic contribution this paper describes and applies alternative methods of apportioning GDP into ocean and non-ocean parts. One method uses ocean closeness as the reference for apportioning GDP. It has been estimated that in 1995 the ocean sector contributed about 33% of South Africa's GDP. A major weakness of the closeness to ocean basis for apportioning GDP is that many of the economic activities taking place near to the ocean use little, if anything, of the ocean resources and its environment as inputs in production. A preferred method of identifying ocean and non-ocean parts of GDP is to divide the value added per economic sub-sector (and sub-set) into ocean and non-ocean parts and summing the ocean parts. This method is outlined and demonstrated using South African data for the 2010 year at the third digit level of the standard industrial classification code list (ICCL or SIC). It is found that in 2010 the overall contribution of the ocean-linked sector to GDP was about 4.4 per cent.' (Hosking, 2013)

The ocean economy has become important to most nations because of the economic potential which it has and the desire to simultaneously exploit the resources and opportunities in order to sustain a growing population and optimize the long-term yield of the resources, while also fulfilling the role of a steward of the ocean resources and environment on behalf of various important constituencies, including the international community and future generations.

The size of the area which potentially constitutes the Ocean Economy has been framed by Hosking as follows:

'The size of South Africa's Exclusive Economic Zone is 1553 000 square kilometers, greater than the land area of the country (which is 1 219 090 square kilometers). The ocean area is governed in terms of South Africa's Maritime Zones Act of 1994 and the United Nations Convention on the Law of the Sea (the Law of Sea Treaty), agreed to in 1982. (Hosking, 2013. Page 4)

The ocean environment sustains and facilitates a wide range of economic activities – not only shipping transport, recreation, fishing but also government ones, like navigation aids and information, weather forecasting, defence, sea rescue, policing and customs, marine and coastal management and research and education, and also mining, farming (aquaculture), pharmacology, science and technology and energy generation.

'About 75% of all South Africa's trade by value (95% by volume) is transported by sea (SANGP100, 2013: 18). In 2012 exports of goods made up 24% of GDP and imports of goods as a proportion of GDP were 27% (SARB, June 2013: S-106).' (Hosking, 2013. Page 6)



Hosking et al investigate various methods of quantifying and measuring the Ocean Economy and then settle upon the 'sum of value added (sectoral) based GDP apportionment methodology based on Standard Industry Classification (SIC) codes for South African data in 2010. The various sectors and sub-sectors are analysed with a view to determining to what extent they have an impact on the ocean economy or have linkages thereto. Extensive modelling was carried out and the following estimated value added by industrial sector and sub-sectors for the Primary and Secondary Sectors in 2010 was established:-

INDUSTRIAL SECTOR (AND STANDARD INDUSTRIAL CODE IN BRACKETS)	IDENTIFIED SUB- SECTORS WITH OCEAN SECTOR QUALIFYING PARTS (VI > 0) IN R MILLIONS (TOTAL INDUSTRY VALUE ADDED IN PARENTHESIS) ¹	PROPORTION OF SUB-SECTOR QUALIFYING AS OCEAN SECTOR (VI): FROM TABLE 4A	OCEAN SECTOR PROPORTION OF EACH SUB-SECTOR (R MILLIONS)	PROPORTION OF OCEAN SECTOR VALUE ADDED TO INDUSTRY SECTOR VALUE ADDED (%)
Agriculture, forestry, and fisheries (1)	15 505 (62 312.2)		15 412	24.7
Ocean and coastal fishing Fish hatcheries and fish farms²	15,195 310	1 .7	15 195 217	
Mining and quarrying (2)	9 573 (233 845.9)		3 292.7	1.4
Petroleum and natural gas extraction ³	3,031	1	3 031	
Alluvial Diamonds, Stone quarrying, clay and sandpits ⁴	6 542	.04	261.7	
Total Primary sector	25 078 (296 158.1)		18 724.3	6.3
Manufacturing (3)	86 462.9 (366 582.7)		3 899.6	1.1
Production, processing and preservation of meat, fish, fruit, vegetables, oils and fats	4 347.3	.1	434.7	
Refined petroleum products and nuclear fuel	63 785.4	.05	3 125.5	
Building of parts for motor vehicles, ships and boats and their engines	15 616.4	.02	312.3	
Manufacturing NEC	2 713.8	.01	27.1	

Table 66: Estimated Value Add by Primary & Secondary Ocean Sectors in 2010 - Hosking



Electricity, Gas, Steam and Hot water supply (4) Collection, purification and distribution of water	11 218.1 (67 946.1) 11 218.1	.01	112.2 112.2	0.2
Construction (5)	75 122.38 (107 779.6)		11 268.4	10.5
Building of complete construction and civil engineering	75 122.38	.15	11 268.4	
Total Secondary Sector	197 881.38 (542 308.4)		15 280.2	2.8
Total Primary and Secondary Sectors	222 959.38 (838 466.5)		34 004.5	4.1

Source: Hosking et al. 2013. The economic contribution of the Ocean Sector in South Africa in 2010.

The same modelling methodology was applied to the tertiary sectors to establish the metrics proportions as per the following table:

Table 67: Estimated Value Added by Tertiary	Ocean Sectors in 2010 - Hosking
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INDUSTRIAL SECTOR (AND STANDARD INDUSTRIAL CODE IN BRACKETS)	IDENTIFIED SUB- SECTORS WITH OCEAN SECTOR QUALIFYING PARTS (VI > 0) IN R MILLIONS (TOTAL INDUSTRY VALUE ADDED IN PARENTHESIS),	PROPORTION OF SUB-SECTOR QUALIFYING AS OCEAN SECTOR (VI): FROM TABLE 4A	OCEAN SECTOR CONTRIBUTION IN EACH SUB-SECTOR (R MILLIONS)	PROPORTION OF OCEAN SECTOR VALUE ADDED TO INDUSTRY SECTOR VALUE ADDED (%)
Wholesale and retail trade (6)	241 316.6 (339 404.7)		7 128.7	2.1
Non-specialised retail trade	72 972	.001	73	
Food, beverage and tobacco retail trade in specialized	16 630.8	.002	33.3	
stores	81 117.7	.01	811.2	
Other retail trade in new	7 466.9	.01	74.7	
goods	39 370.9	0.5	169.9	
Retail trade not in stores Retail sale of automotive fuel	10 182.1	.25	2 545.5	
Hotels, camping sites and hotel accommodation Restaurants, bars and canteens	13 576.2	.25	3 394.1	
Transport, storage and communications (7)	134 847.3 (236 990)		22 160.9	9.4
Sea and coastal water	2 369.9	1	2 369.9	
transport	5 924.8	.9	5 332.3	
Cargo handling	3 554.9	.1	355.5	
Storage and warehousing Salvaging of distressed	8 531.6	1	8 531.6	
vessels, cargoes and harbour	3 791.8	.01	37.9	
works Postal and courier services Telecommunications	110 674.3	.05	5 533.7	



Financial intermediation, insurance, real estate and business services (8) Insurance and pension funding ² Real estate activities Renting of machinery and equipment, including transport equipment	102 465.3 (518 514.1) 1 873.6 88 147.4 12 444.3	.05 .3 .001	26 550.3 93.7 26 444.2 12.4	5.1
Community, social and personal services (9) General government activities Educational services Other membership organisations Motion picture, radio, televison and other entertainment Libraries, museums and other cultural activities	538 736.1 (561 940.4) 375 773.4 121 941.1 5 619.4 32 030.6 3 371.6	.05 .01 .01 .005 .02	20 291.9 18 788.7 1 219.4 56.2 160.2 67.4	3.6
Total for tertiary sector	1 017 365.3 (1 656 849.2)		76 131.8	4.6
Total for primary and secondary sectors	222 959.38 (838 466.5)		34 004.5	4.1
Total for primary, secondary and tertiary sectors	1 240 324.68 (2 495 315.7)		110 136.3	4.4

Source: Hosking et al. 2013. The economic contribution of the Ocean Sector in South Africa in 2010.



The highest current valued contribution of the ocean sector within the South African economy is found to be in the primary sector, due mainly to the influence of the fishery industry. The ocean sector contributes about 6.3% of the total primary sector GDP. This compares with a 2.8% contribution to GDP in the secondary sector and a 4.6% contribution in the tertiary sector, the latter being boosted by the shipping and recreation industrial activity.

These contributions average out, and in 2010 the overall contribution of the ocean-linked sector to GDP was approximately 4.4 per cent.

These ratios and metrics had been used by the current authors to evaluate the 2015 Gross Domestic Product (GDP) for South Africa, and apply the ratios to a forward projection of GDP over a thirty-year timeframe.

The established GDP to employment trends for all of South Africa's primary sectors and sub-sectors have been extrapolated to the 'Ocean Economy' sectors and based upon this methodology, an employment profile for the ocean economy had been compiled, both for the current economy and for the projections.

This methodology was used for a SAIMI project in order to establish the South African Ocean Economy employment profile and in order to determine the extent of the skills surplus or deficit in South Africa.

12.3.3 Stephen Hosking's Forecast Methodology & Metrics - 2017

Subsequent to the above paper, Stephen Hosking undertook a revision of this methodology in 2017 based upon South African economic data based to the year 2015, rather than the previous 2010 data. He had been tasked with updating the GDP and job contributions, as well as commenting on the Operation Phakisa targets for the SA Ocean Economy.

The methodology used was substantially similar, and based upon:

- 1. The apportionment of Gross Domestic Product (GDP) rules (Methodology),
 - a. With Ocean Economy GDP at 4.4% of SA GDP in 2015 R 128 billion.
 - b. With Ocean Economy Jobs at 4.4% of SA Jobs in 2015 425,524 Jobs.
- 2. A maritime land area (geographically defined) method for estimating GDP,
 - a. With the four coastal provinces at 39.5% of all SA GDP in 2015 R 1,208 billion.

This report uses a variation in the composition of the standard industrial classification (SIC) for the computation of the Ocean Economy sectors within total GDP, based upon the following factors:

- · There has been an increase in the relative proportion of ocean dependent activities per SIS sub-sector over time, and
- The changing relative contributions of the SIC sub-sectors in the overall value of GDP. (Hosking, 2017)

The reasons for this change in the relative proportion has been ascribed to 'the changing relative contributions of the SIC subsectors in the overall value of GDP is that brought about by structural industrial change in the South African economy and global market and domestic business cycle effects.' (Hosking, 2017)



Based upon these changes, Hosking has adapted his estimated value added at factor cost by economic sector and sub-sector for the year 2015, and updated his GDP tables for all ocean sectors for 2015. The tables and their ocean economy factors are as follows:

Fable 68: Estimated Value Add b	y Primary	& Secondary	Ocean Sectors	in 2015 - Hosking
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INDUSTRIAL SECTOR (AND STANDARD INDUSTRIAL CODE IN BRACKETS)	IDENTIFIED SUBSECTORS WITH OCEAN SECTOR QUALIFYING PARTS (VI > 0) IN R MILLIONS (TOTAL INDUSTRY VALUE ADDED IN PARENTHESIS)	PROPORTION OF SUB-SECTOR QUALIFYING AS OCEAN SECTOR (VI) (R MILLIONS)	OCEAN SECTOR PROPORTION OF EACH SUB- SECTOR (R MILLIONS)	PROPORTION OF OCEAN SECTOR VALUE ADDED TO INDUSTRY SECTOR VALUE ADDED (%)
Agriculture, forestry and fisheries (1)	(71 418)		3 566	5.0
Ocean and coastal fishing (SIC151) and Fish hatcheries and fish farms (SIC153)	3 566	1	3 566	
Mining and quarrying (2)	(236 457)		4 780	2
Petroleum and natural gas extraction and related services (SIC221) Mining of Diamonds (SIC252) and Mining and Quarrying (including extraction and evaporation of salt) (SIC253)	28 624	0.167	4 780	
Total Primary Sector	307 875		8 346	2.7
Manufacturing (3)	(381 078)		7 705	2
Manufacture of food (SIC3014)	55 480	0.1	5 548	
Manufacture of Petroleum Products (SIC3312)	36 638	0.05	1832	
Building of parts for transport other than motor vehicles, e.g., ships and boats and their engines (SIC3846)	4 922	0.02	98	
Manufacturing not elsewhere classified (n.e.c.) (Ocean Sports goods) (SIC392)	22 /23	0.01	227	
Electricity, Gas and Water Supply (4)	(66 484)		165	1



INDUSTRIAL SECTOR (AND STANDARD INDUSTRIAL CODE IN BRACKETS)	IDENTIFIED SUBSECTORS WITH OCEAN SECTOR QUALIFYING PARTS (VI > 0) IN R MILLIONS (TOTAL INDUSTRY VALUE ADDED IN PARENTHESIS)	PROPORTION OF SUB-SECTOR QUALIFYING AS OCEAN SECTOR (VI) (R MILLIONS)	OCEAN SECTOR PROPORTION OF EACH SUB- SECTOR (R MILLIONS)	PROPORTION OF OCEAN SECTOR VALUE ADDED TO INDUSTRY SECTOR VALUE ADDED (%)
Collection, Purification and Distribution of Water (desalination) (SIC420)	16 549	0.01	165	
Construction (5)	(108 353)		10 835	10
Building of complete constructions and civil engineering (coastal homes) (SIC 501 and 502)	108 353	0.1	10 835	
Total Secondary Sector	555 915		18 705	3.4
Total Primary and Secondary Sectors	863 790		27 051	3.1

Source: Hosking, 2017. Progress overview on the contribution of the South African Ocean Sector (draft)



The same methodology has been applied to the tertiary sectors and the tables and their ocean economy factors are as follows:

Table 69: Estimated Value Add	ed by Tertiary C	Ocean Sectors in 2	2015 - Hosking
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INDUSTRIAL SECTOR (AND STANDARD INDUSTRIAL CODE IN BRACKETS)	IDENTIFIED SUBSECTORS WITH OCEAN SECTOR QUALIFYING PARTS (VI > 0) IN R MILLIONS (TOTAL INDUSTRY VALUE ADDED IN PARENTHESIS)	PROPORTION OF SUB-SECTOR QUALIFYING AS OCEAN SECTOR (VI) (R MILLIONS)	OCEAN SECTOR PROPORTION OF EACH SUB- SECTOR (R MILLIONS)	PROPORTION OF OCEAN SECTOR VALUE ADDED TO INDUSTRY SECTOR VALUE ADDED (%)
Wholesale and retail trade (6)	(421 407)		11 405	2.7
Wholesale trade (SIC 61) Retail trade (SIC 62): Catering and Accommodation (SIC 64)	140 267 197 510 23 692	0.025 0.01 0.25	3 507 1 975 5 923	
Transport, storage and communications (7)	(260 932)		12 148	4.7
Water transport (SIC 72) Transport support services (SIC 74) Telecommunications (SIC 752)	926 29 923 74 830	1 0.25 0.05	926 7 480 3 742	
Financial intermediation, insurance, real estate and business services (8)	(605 550)		52 879	8.7
Insurance and pension funding (SIC 82) Real estate activities (SIC 84) Renting of machinery and equipment, including transport equipment (SIC 85)	66 278 165 192 6 876	0.05 0.3 0.001	3 314 49 558 7	
Community, social and personal services (9)	(795 940)		24 997	3.1
General government activities Other non-market producers Community, social and personal services	467 062 59 793 104 646	0.05 0.01 0.01	23 353 598 1 046	
Total for tertiary sector	2 083 829		101 429	5.2
Total for primary and secondary sectors	863 790		27 051	3.1
Total for primary, secondary and tertiary sectors	2 947 619		128 480	4.4

Source: Hosking, 2017. Progress overview on the contribution of the South African Ocean Sector (draft)



This data and methodology provides a holistic view of the South African ocean economy as follows:

Table 70: An Analysis of the Ocean sub-sector GDP Contribution in 2015 - Hosking

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INDUSTRY SECTOR	SOUTH AFRICAN GDP CONTRIBUTION R MILLIONS	OCEAN SUB-SECTOR VALUE CONTRIBUTION R MILLIONS	% OF OCEAN SECTOR TOTAL GDP VALUE
(1)Agriculture, forestry and fisheries	71 418	3 566	2.8
(2)Mining and quarrying [Sea floor Petroleum, gas and Diamonds, Salt]	236 457	4 780	3.7
(3)Manufacturing [Processing fish, Refining petroleum/gas, building and repairing ships, manufacturing for ocean sport/recreation]	381 078	7 705	6
(4)Electricity, Gas, Steam and Hot water supply [Desalination of sea water and distribution of this water, ocean atmospheric energy]	66 484	165	0.1
(5)Construction [Ocean using homes and facilities, harbour development]	108 353	10 835	8.4
(6)Wholesale and retail trade [Marine Tourism (Catering and Accommodation), primary and secondary ocean product selling]	421 407	11 405	8.9
(7)Transport, storage and communications [Logistical support and Marine Tourism (transport)]	260 932	12 148	9.5
(8)Financial intermediation, insurance, real estate and business services [Maritime Trade and Marine Tourism support (ocean proximate property, risk)]	605 550	52 879	41.1
(9)Community, social and personal services [General Government Support]	795 940	24 997	19.5
Total	2 947 619	128 480	100

Source: Hosking, 2017. Progress overview on the contribution of the South African Ocean Sector (draft) [DZ has inserted the first column for comparative purposes, South African GDP data from the earlier Hosking tables]



With regard to employment generation, Hosking has first established that there were 223,791 VAT paying institutions in 2016 and then determined that the aggregate non-farm (formal) employment in 2016 was 9,671,000 based on Statistics SA. (Statssa 2017b).

Hosking then uses this employment baseline and the established ocean economy ratio of 4.4% of GDP to calculate ocean economy employment on the following basis: 'Assuming linearity across sectors in the relationship between aggregate income and employment, the ocean sector employment in September 2016 is estimated to be:

4.4/100 of 9 671 000 = 425 524 jobs.' (Hosking, 2017)

The author of this report disagrees with the non-farm (formal) data used by Hosking, and has used Quantec Data information, which is based upon Statistics SA to derive a figure of 14,625,990 for non-farm (formal) jobs. By applying the same assumption of linearity across the sectors for aggregate income and employment, the following outcome is derived:

4.4/100 of 14,625,990 = 643,544 jobs (Current author, 2019)

The difference in this calculation is 218,020 jobs, an increase of 51 percent.

This difference in methodology between Hosking and the current authors needs to be reconciled.

Comments on overall development of the SA Ocean Sector (Hosking):-

- 1. To realise R 177 billion by 2033, real growth of 1.82% p.a. Not overly ambitious.
- 2. To realise 1 million Jobs by 2033, real growth of 4.9% p.a. This growth is ambitious.
- 3. SA fish production is mainly from wildfish, aquaculture is minor:
 - Even though Aquaculture Development Zones (ADZs) have been set aside,
 - Suggesting there are technological or market price constraints.
- 4. Statistics SA does not identify the numerous Ocean Sector interests in their data.
- 5. Poor business cycle conditions in 2015 to 2018 will result in low Ocean Sector growth.

The following warrant further research (Hosking):-

- 1. The dynamics of the ocean contribution per sub-sector.
- 2. Intermediate alternatives to marine aquaculture, such as winning and regulating new fish quotas in international waters and or within South Africa's Island EEZ.
- 3. The scope and mechanisms through which the ocean attribute influences spending (and income) in the construction and tertiary sub-sector.
- 4. The comparative transport cost disadvantage of the Eastern Cape and Northern Cape.



12.3.4 Current Study GDP Forecast Methodology & Metrics

The two Hosking reports as detailed above have been perused and the fundamental principles for defining the ocean economy in South Africa adopted in the macroeconomic Gross Domestic Product (GDP) forecast over twenty years.

The South African and Eastern Cape Ocean Economy forecast over twenty years from 2019 to 2038 has been undertaken in four steps as follows:

- 1. Analyse the South African and Eastern Cape economies past performance over the past ten-years to 2018, in order to establish trends and metrics for looking forward,
- 2. Prepare a GDP forecast over twenty years based upon a credible compound average growth rate (CAGR) for both South Africa and the Eastern Cape,
- 3. Apply the Hosking derived value added metrics at factor cost to the major sectors and sub-sectors in order to establish the Ocean Economy GDP, and
- 4. Apply the same Hosking derived value added metrics at factor cost to the major sectors and sub-sectors in order to establish the Ocean Economy employment profile.
- 12.3.4.1 South Africa's Baseline Metrics for the 20 Year Forecast

The South African economy and socio-demographic profile as at 2018 is analysed in some detail in section 13.1 hereafter and an analysis of the past decade of economic performance has been undertaken in section 5.2 above. Together these two sets of economic data provide a useful insight into the current situation and the trends up to 2018.

With regard to the prognosis for the South African economy going forward, reliance has been placed on South Africa's National treasury have formulated an opinion as follows:

'The economic outlook has weakened since the 2018 MTBPS, with growth now projected to increase from 1.5 per cent in 2019 to 2.1 per cent in 2021. The revisions take into account weaker investment outcomes in 2018, a more fragile recovery in household income and slower export demand than expected due to moderating global growth. Consumer price index inflation is expected to average 5.2 per cent in 2019, up from 4.7 per cent in 2018, in response to rising food prices. The global outlook is becoming less supportive of South Africa's economy, with signs of slower growth in China and Europe.' (National Treasury, 2019)

Their primary economic indicators looking forward have been estimated as follows:

Figure	20: National	Treasury	Macroeconomic	Performance	and Projections
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Parrowth see changes	2015	2016	2017	2018	2019	2020	2021	
Percentage change	Actual			Estimate	Forecast			
Household consumption	1.8	0.7	2.2	1.5	1.5	2.0	2.3	
Gross fixed-capital formation	3.4	-4.1	0.4	-0.2	1.5	2.1	3.0	
Exports	2.8	1.0	-0.1	2.0	2.3	2.7	2.8	
Imports	5.4	-3.8	1.6	3.8	1.7	3.2	3.3	
Real GDP growth	1.3	0.6	1.3	0.7	1.5	1.7	2.1	
CPI inflation	4.6	6.3	5.3	4.7	5.2	5.4	5,4	
Current account balance (% of GDP)	-4.6	-2.8	-2.4	-3.5	-3.4	-3.8	-4.0	

Source: National Treasury, 2019. Budget Review 2019

The National Treasury macroeconomic projects have been read in the context of the Standard Industrial Classification (SIC) sectors performance and trends over the past five years, and a series of metrics for forward projections of these sectors formulated. Certain sectors have been in decline over the past years, and this decline has not been perpetuated and forecast going forward. For these sectors relatively low or mild growth has been forecast and the sectoral averages and totals for the next twenty years are indicated in the comprehensive table below:

Table 71: South African GDP Past Profile	 Informing Forecast Rate Per Annum
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Regional Output	t and GVA at Basic Prices by Industry		Actual	Year 1-5	Year 6-10	Year 11-15	Year 16-20
Real Gross Valu	e Added (GVA) at basic prices, R millions, constant 2010 p	orices.	2013 - 2018	2019 - 2023	2024 - 2028	2029 - 2033	2034 - 2038
South Africa	GVA in R millions, Constant 2010 Prices	%	%∆p.a.	%∆p.a.	%∆ p.a.	%∆p.a.	%∆ p.a.
	Total - Economic Sectors	100%	0.92%	1.00%	1.20%	1.50%	2.00%
	Agriculture, forestry and fishing	2.6%	0.85%	1.25%	1.25%	1.50%	2.00%
	Mining and quarrying	8.1%	-0.02%	0.00%	0.50%	1.00%	1.75%
	Manufacturing	13.5%	0.30%	0.75%	1.00%	1.00%	1.50%
	Electricity, gas and water	2.3%	-0.69%	0.75%	1.00%	1.00%	1.75%
	Construction	3.8%	0.94%	0.50%	0.75%	1.00%	2.00%
	Wholesale and retail trade, catering and accommodation	15.1%	1.11%	1.00%	1.00%	1.50%	2.00%
	Transport, storage and communication	9.6%	1.84%	1.50%	1.75%	2.00%	2.50%
	Finance, insurance, real estate and business services	22.4%	2.21%	2.25%	2.50%	3.00%	3.00%
	General government	16.7%	1.26%	1.00%	1.00%	1.50%	1.50%
	Community, social and personal services	6.0%	1.38%	1.00%	1.25%	1.50%	2.00%

Source: This reports author's interpretation of the sectoral economic data provided by Quantec Data.



The same exercise has been undertaken with the employment profiles over the past five years, with the major sectoral trends established and then forecast metrics established based upon these trends in the context of current sentiment and policy initiatives.

Employment by Industry		Jobs Actual	GDP Actual	Job Growth	Year 1-5	Year 6-10	Year 11-15	Year 16-20
Employment (Number): Total		2013 - 2018	2013 - 2018	Factor Of	2019 - 2023	2024 - 2028	2029 - 2033	2034 - 2038
Employment By Industry. In Job Numbers	%	%∆p.a.	%∆p.a.	GDP Growth	%∆p.a.	%∆p.a.	%∆p.a.	%∆p.a.
Total - Economic Sectors	100%	1.29%	0.92%	1.40	1.55%	1.67%	1.78%	1.83%
Agriculture, forestry and fishing	7.0%	1.83%	0.85%	2.16	1.80%	2.00%	2.20%	2.50%
Mining and quarrying	3.1%	-2.36%	-0.02%	105.88	-0.20%	-0.20%	0.00%	0.00%
Manufacturing	9.3%	0.20%	0.30%	0.66	0.25%	0.50%	0.50%	0.50%
Electricity, gas and water	0.4%	0.72%	-0.69%	1.04	1.00%	1.00%	0.75%	0.50%
Construction	6.2%	3.94%	0.94%	4.18	3.50%	4.00%	4.50%	4.50%
Wholesale and retail trade, catering and accommodation	22.4%	2.56%	1.11%	2.31	2.75%	3.00%	3.25%	3.50%
Transport, storage and communication	4.4%	0.76%	1.84%	0.41	1.00%	1.50%	1.75%	2.00%
Finance, insurance, real estate and business services	17.6%	2.85%	2.21%	1.29	3.00%	2.50%	2.50%	2.50%
General government	12.1%	0.36%	1.26%	0.28	0.35%	0.35%	0.30%	0.25%
Community, social and personal services	17.4%	2.00%	1.38%	1.45	2.00%	2.00%	2.00%	2.00%

Table 72: South African Jobs Past Profile - Informing Forecast Rate Per Annum

Source: This reports author's interpretation of the sectoral economic data provided by Quantec Data.

12.3.4.2 Eastern Cape Baseline Metrics for the 20 Year Forecast

The Eastern Cape economy and socio-demographic profile as at 2018 is analysed in some detail in section 13.1 hereafter and an analysis of the past decade of economic performance has been undertaken in section 5.2 above. Together these two sets of economic data provide a useful insight into the current situation and the trends up to 2018.

Table 73: Eastern Cape GDP Past Profile - Informing Forecast Rate Per Annum

			Actual	Year 1-5	Year 6-10	Year 11-15	Year 16-20
Real Gross Valu	Real Gross Value Added (GVA) at basic prices, R millions, constant 2010 prices.			2019 - 2023	2024 - 2028	2029 - 2033	2034 - 2038
Eastern Cape	GVA in R millions, Constant 2010 Prices	%	%∆p.a.	%∆p.a.	%∆p.a.	%∆ p.a.	%∆p.a.
	Total - Economic Sectors	7.5%	0.87%	0.85%	1.13%	1.63%	2.00%
	Agriculture, forestry and fishing	1.6%	-1.56%	0.00%	0.50%	1.00%	1.50%
	Mining and quarrying	0.3%	-0.26%	0.00%	0.30%	0.50%	0.75%
	Manufacturing	13.6%	0.10%	0.50%	0.75%	1.25%	1.50%
	Electricity, gas and water	1.2%	-0.49%	0.00%	0.50%	1.00%	1.25%
	Construction	3.8%	0.39%	1.00%	1.50%	2.00%	2.50%
	Wholesale and retail trade, catering and accommodation	19.5%	0.58%	1.00%	1.50%	2.00%	2.50%
	Transport, storage and communication	8.9%	1.57%	2.00%	2.00%	2.50%	3.00%
	Finance, insurance, real estate and business services	20.6%	1.58%	2.00%	2.00%	3.00%	3.00%
	General government	22.9%	1.10%	1.00%	1.00%	1.50%	2.00%
	Community, social and personal services	7.5%	0.87%	1.00%	1.20%	1.50%	2.00%

Source: This reports author's interpretation of the sectoral economic data provided by Quantec Data.



The same exercise has been undertaken with the employment profiles over the past five years, with the major sectoral trends established and then forecast metrics established based upon these trends in the context of current sentiment and policy initiatives.

Employment by Industry - Eastern Cape		Actual	GDP Actual	Job Growth:	Year 1-5	Year 6-10	Year 11-15	Year 16-20
Employment (Number): Total		2013 - 2018	2013 - 2018	Factor Of	2019 - 2023	2024 - 2028	2029 - 2033	2034 - 2038
Employment By Industry. In Job Numbers	%	%∆p.a.	%∆p.a.	GDP Growth	%∆p.a.	%∆p.a.	%∆p.a.	%∆p.a.
Total - Economic Sectors	100%	1.69%	0.87%	1.93	1.90%	2.20%	2.40%	2.40%
Agriculture, forestry and fishing	8.1%	2.29%	-1.56%	-1.47	2.00%	2.50%	3.00%	3.00%
Mining and quarrying	0.2%	-0.21%	-0.26%	0.79	0.00%	0.50%	0.75%	0.75%
Manufacturing	8.0%	-0.39%	0.10%	-3.84	0.50%	0.75%	1.00%	1.00%
Electricity, gas and water	0.3%	1.07%	-0.49%	2.18	1.50%	1.75%	2.00%	2.00%
Construction	5.9%	4.17%	0.39%	10.76	4.00%	5.00%	5.00%	5.00%
Wholesale and retail trade, catering and accommodation	23.5%	2.51%	0.58%	4.35	5.00%	5.00%	5.00%	5.00%
Transport, storage and communication	3.6%	0.56%	1.57%	0.35	2.00%	2.00%	2.00%	2.00%
Finance, insurance, real estate and business services	12.7%	2.58%	1.58%	1.63	2.00%	2.50%	3.00%	3.00%
General government	17.0%	0.09%	1.10%	0.08	1.00%	1.00%	1.00%	1.00%
Community, social and personal services	20.8%	1.93%	0.87%	2.21	1.00%	1.00%	1.20%	1.20%

Table 74: Eastern Cape Jobs Past Profile - Informing Forecast Rate Per Annum

Source: This reports author's interpretation of the sectoral economic data provided by Quantec Data.

12.3.4.3 SA and Eastern Cape Baseline Metrics for the 20 Year Forecast

These forecast metrics as established for South Africa and the Eastern Cape, for both GDP and Employment or Jobs, have been used to produce the economic forecasts which are provided in more detail in the earlier section 5.2 of this report.



12.4 SAIMI - SA MARITIME ROADMAP -2017

The scope of the Maritime Road Map covers both the maritime and marine domains. "Maritime" is defined as "connected with the sea, especially in relation to seaborne trade or naval matters", whereas "marine" is defined as "relating to or found in the sea".

The thematic areas that SAIMI have used to define the scope of the Maritime Road Map are illustrated in the figure alongside.

Further to this, the three key elements of the Maritime Road Map are seen to be research, innovation and knowledge management.

The Maritime Road Map features a vision and mission and furthermore identifies a series of eight high-level objectives, each of which characterises and complements the stated vision for the maritime sector. Each of these objectives subsequently translates into a number of actions which collectively map out the road that needs to be followed to get from the current state to the desired state.

Following the launch of Phakisa: Oceans Economy, the SAIMI project team ran another round of regional workshops and liaised with the Oceans Economy Secretariat to ensure alignment between the Maritime Road Map and the Phakisa: Oceans Economy initiatives.

The objectives needed to attain the desired state for South Africa's maritime sector were identified during the Integrated Marine and Maritime Technologies Thought-Leaders Indaba, updated with inputs from two rounds of regional workshops, confirmed through interviews and validated through a literature review. The eight objectives are presented in the figure with their interdependences indicated by the blue arrows. The realisation of Objectives 1 to 7 supports the realisation of Objective 8, which can be classified as the overarching objective. Figure 21: Operation Phakisa Four Labs – Problems and Aspirations



Source: SAIMI SA Maritime Sector Roadmap, 2015.

The specific mission supported by the Road Map is: "Unlocking South Africa's maritime potential through research, development and innovation"

The mission supports the following overarching vision: "By 2030 South Africa is globally recognised as a maritime nation"

Objective 5 states that "We have a research, innovation and knowledge management system that is relevant, well-functioning, targeted and multi-disciplinary"

The Road Map state the following regarding research, innovation and knowledge management:

"The current state of research, innovation and knowledge management in South Africa is still far removed from the desired state. A number of opportunities exist, however, and quite a few have recently been created, especially since the launch of Phakisa: Oceans Economy. Two examples are SAIMI, which is funded by the Department of Higher Education and Training (DHET) and has been established to coordinate all skills and capacity building activities within the Phakisa: Oceans Economy process and the South African Marine Research and Exploration Forum (SAMREF), a platform that aims to foster collaboration between the scientific community and the oil and gas industry as well as other offshore resource extraction industries.

Despite these promising developments, there are still a number of areas that need improvement. For example, there is still a lack of relevant tertiary education in maritime-related subjects. In instances where such subjects are being offered, too much emphasis seems to be placed on academic training as opposed to practical training or apprentice-ships. In addition, there is still a problem with the quality and relevance of further education and training (FET) based qualifications to the maritime sector.

The development of scarce skills and the retention of people with such skills in South Africa is also an issue of concern. Not only are there very few individuals with scarce skills in the maritime sector, these individuals are finding more lucrative employment overseas, and those who are still in the country are retired or close to retirement age. In addition, jobs with scarce skills requirements need to be created within South Africa in order to absorb new entrants into the job market.

There is also a strong need to develop industry relevant R&D, technologies and innovation for the maritime sector. The problem is that universities do not currently house enough departments for maritime relevant disciplines. In addition, university IP regulations often state that the IP needs to remain with the university, which can severely inhibit the funding or use of this work by the maritime industry. (SAIMI, 2017. Maritime Roadmap.)



The actions for achieving the desired state through research, innovation and knowledge management are seen as being the following:



Figure 22:Actions Required for R&D, Innovation and Knowledge Management.

Herewith an overview of current opportunities as identified by stakeholders in the maritime sector.

Table 75: Snapshot of Opportunities in Maritime Sector - SAIMI Roadmap 2017

KNOWLEDGE MANAGEMENT	R&D. TECHNOLOGY AND INNOVATION	EDUCATION AND SKILLS DEVELOPMENT
National Science & Technology Forum (NSTF): This is a stakeholder forum that focuses on communication around science, engineering, technology and innovation (SETI) policy issues, and presents good networking opportunities for members of the maritime sector.	Marine Science Platform (DST): The Marine Sciences Platform under DST provides a policy platform for the maintenance of marine and oceanic research and human capital development through the provision of resources.	Heritage Beaches project: This project presents an opportunity to develop maritime archaeology related skills among young people.
OceanSAfrica: The OceanSAfrica initiative is designed to take existing oceanography research and pre- operational outputs, routinely place them in the public domain in a highly accessible format, and demonstrate direct benefit to key societal stakeholders through the provision of tailored information for environmental decision making in the marine and freshwater domains.	The South African Environmental Observation Network (SAEON): The Egagasini Node in particular houses a number of long-term observation and modelling research programmes over a range of disciplines from offshore marine protected areas to benthic biodiversity and physical oceanography in the offshore and coastal environments. The Elwandle Coastal Node, which established the Algoa Bay Sentinel Site, plans to replicate Long Term Ecological Research (LTER) sentinel sites around the coast of South Africa, the sub-Antarctic Islands and Antarctica.	SAMSA: SAMSA runs various initiatives such as providing port-graduate students with the opportunity to study at the World Maritime University (WMU) and subsidising the salaries of experts to teach at the Cape Peninsula University of Technology (CPUT)



Source: SAIMI SA Maritime Sector Roadmap, 2015.

12.5 SAIMI OVERVIEW - RESEARCH & TECHNOLOGY IN SA MARITIME SECTOR - 2017

In the publication known as 'Reflections on the state of research and technology in South Africa's Marine and Maritime sectors', the authors have presented a range of discourses to reflect on and highlight the current status of Research and Development (R&D) and technology in the marine and maritime sectors in South Africa.

The preface to the publications introduces it as follows:

"In his 2014 State of the Nation Address, President Jacob Zuma highlighted the triple challenge of poverty, inequality and unemployment. Addressing this challenge, in particular through the implementation of the National Development Plan, is a key priority for the South African government. Key economic drivers that are of significance for the marine and maritime sectors are tourism, the Green Economy, infrastructure development and manufacturing. Maximising the potential of these drivers can substantially increase the ability of the marine and maritime sectors to contribute to South Africa's economy.

South Africa has not fully exploited its marine and maritime economy, which justifies the emerging emphasis on the South African ocean economy. The South African government has an important role to play in promoting the development of this economy through establishing an enabling policy environment, and ensuring effective regulation and appropriate resource allocation. Research and development (R&D) in marine and maritime industries, as well as research and academic organisations, produce marine and maritime-related knowledge and technology. This focus on R&D gives impetus to the development of the country's marine and maritime resources and has the potential to contribute to the growth of the ocean economy.

South Africa's oceans and coasts should be developed in a responsible manner to facilitate the sustainable utilisation of marine and maritime resources and secure the long-term growth of the ocean economy. Knowledge and technology play an important role in understanding the ocean, its resources and how to utilise these resources in a responsible manner to ensure their continued availability for generations to come.

The South African Maritime Safety Authority (SAMSA) has a key role to play in supporting growth in the marine and maritime sectors through ensuring safety of life and property at sea, preventing and combatting pollution from ships, and promoting the Republic's maritime interests. The Department of Science and Technology (DST) also has an important role to play in building and developing the ocean economy, for instance, through its Socio-economic Partnerships Programme, which enhances growth and development priorities through targeted science and technology interventions and the development of strategic partnerships with other government departments, industry, research institutions and communities. The DST is also involved in various marine science research initiatives that have the potential to link basic research to applied research, increase human capital, develop R&D and build closer links with industry.

This book endeavours to contribute to these objectives by presenting diverse contributions to reflect on the state of R&D and technology in South Africa's marine and maritime sectors. Its contribution lies in making the practical application of R&D and technology in the marine and maritime sectors explicit, and highlighting the ways in which this can be strengthened and improved." (Funke N, 2014. Page ii)



After the introduction the book is divided into four parts with the following themes:

Part 2: The way forward for the maritime sector: Regulatory and strategic views,

Part 3: Current research and technology advances in the marine sciences,

Part 4: Research in the humanities for the maritime sector, and

Part 5: Infrastructure and technology support to the South African navy.

None of the chapters within these themes address maritime skills either directly or indirectly, and the most useful for the purposes of this paper is chapter four titled 'Scenarios for the South African Maritime Sector', and which introduces four scenarios into the South African maritime sector and reflects on how best to use these scenarios as a tool to support decision making and planning. The chapter has been precis as follows:

"The authors argue that a very challenging part of any scenario development process is to disseminate them and to try to ensure that they are taken up by their intended target audiences. A potential way forward for the Maritime Nation scenarios is to present them to a wide range of stakeholders in the sector for further inputs, refinements and ultimately buy-ins. This will require a key decision-maker in the sector to take ownership of the scenarios, and the development and implementation of an adequately resourced communication strategy. The revised scenarios could then be used for strategy development, planning and management in the maritime sector." (Funke N, 2014. Page 12)

The chapter identifies a series of drivers of change which are seen to be the most significant and the most uncertain, and could affect the extent to which South Africa is a maritime nation by the year 2030. In order to demarcate the scope of the sector the major themes identified were shipping and transport, marine resources and marine tourism. The sub-themes identified indicated application areas such as logistics infrastructure, offshore energy and mining, sports and recreation and leisure. This overview provided a context which highlighted the three main themes in relation to their sub-themes, and then identified the 'cross-cutting themes' which indicated the strong inter-relationships between the various maritime sectors.



Figure 23: Main themes, sub-themes and cross-cutting themes for the SA maritime sector



(Source: The way forward for the Maritime Sector. Funke N, 2014. Page 56)



The drivers of change were further evaluated in a series of presentations and workshops which revealed the key characteristics in relation to the drivers of change. One of these relates to the extent of the uptake of research, innovation and knowledge management in the maritime sector, whereas another relates to the extent to which the sector is unified, with a unified sector having shared objectives, coordinated activities which are efficient in the deployment of resources and effectively achieve the shared objectives.

These two characteristics constitute the axes for the scenario matrix, as presented in the figure below. The two axes bring about four possible scenarios.

Figure 24: Scenario Matrix for the SA maritime sector



(Source: The way forward for the Maritime Sector. Funke N, 2014. Page 58)

The bottom left scenario in the figure describes a future where the maritime sector is divided and where there is limited uptake of research, innovation and knowledge management - 'Lost at Sea'. The bottom right scenario describes a future environment where the sector is divided, but the uptake of research, innovation and knowledge management is extensive. This represents an opportunistic maritime nation and it is called 'Islands of Excellence'. The top left scenario describes a future where there is limited uptake of research, innovation and knowledge management, but where the sector is unified. This results in a maritime nation lagging behind international peers and competitors in relation to technology development and uptake. This scenario is called 'Rowing Together'.

The final scenario in the top right combines the extensive uptake of research, innovation and knowledge management with a unification of the sector to support a prosperous maritime nation. This scenario is called 'Full Steam Ahead'.

This scenario represents utopia for the sector under which it is unified in its approach to remain globally recognised as a leading maritime nation and benefits from an uptake in research, high levels of innovation and effective knowledge management. The path towards this option should be consciously planned and incorporated into government and private sector strategies and plans.



12.6 SAIMI SKILLS DEVELOPMENT PROJECTS BEING IMPLEMENTED

The following projects either have been implemented, or are the process of being implemented by the South African International Maritime Institute (SAIMI)

14.6.1 Skills Development - Ocean & Maritime Sector Initiatives

Table 76: FADI Alternative Livelihoods Project

#	LABEL	NARRATIVE
1	Project Name	Fisheries and Aquaculture Development Institute (FADI) alternative livelihoods project.
2	Project Location	Port Elizabeth Metro, Eastern Cape
3	Project Owner / Driver	SAIMI offering skills training through the Fisheries and Aquaculture Development Institute (FADI), in the Western Cape and Eastern Cape
4	Brief Project Overview [Nature or function, primary purpose, service or clients, rationale]	The SAIMI funding will support a specified, time-bound and targeted programme to provide skills development to identified beneficiaries along with coaching and mentorship to ensure the sustainability of the intervention, which accords with SAIMI's objective of supporting lasting change. Seasonal fishing workers, fishers affected by fish stock availability and access,
		the unemployed and youth.
		Skills training in entrepreneurship and construction.
		This project is targeted at providing training, skills development and mentoring to seasonal and under-/unemployed fishers in coastal communities to assist them in identifying and establishing new enterprise opportunities and alternative sources of income.
		Empowerment of small-scale fishers from coastal fishing communities with alternate skills in entrepreneurship and construction. This new skills gain makes it possible for them to earn income as skilled construction workers as well as entrepreneurs (i.e. earn income beyond fishing).
		The project takes place against a global challenge of declining fish stocks which also affects South Africa, and presents challenges of food and income security, as well as environmental degradation. The project's aim to build capacity in these communities to earn income from alternative sources thus also supports the drive to maintain the sustainability of South Africa's fishery by diverting subsistence fishers into alternative livelihoods with lower environmental impact and meaningful income.
5	Capital Value [R m]	R1 494 000 - 20 x PE beneficiaries (70 total in WC and EC) - over 7 months



#	LABEL	NARRATIVE
6	Construction Start Date	N/A
7	Constructions Jobs p.a.	N/A
8	Operation Start Date	Started 1 April 2019
9	Operating Costs p.a.	N/A - this is a one-time training intervention at the cost indicated above, with continued mentoring and coaching support until successful they are either successfully employed or started their own businesses.
10	Operating Jobs p.a.	20 learners who will have skills to either be employed or start their own businesses
11	Turnover or Value (GVA)	In employment terms, it is projected that the project will generate 97 additional jobs within a two (2) year period. This includes direct, indirect and induced jobs.
12	Economic Linkages	Construction / Entrepreneurship
13	'Lever' to 'Unlock'	No, however the project success is subject to the release of funds from the National Skills Fund
14	Any Other Points	-
15	Project Map or Image, or both.	Port Elizabeth Metro, Eastern Cape



Table 77: SEASI Skills Training in the Squid Industry

#	LABEL	NARRATIVE
1	Project Name	SEASI Skills training in the Squid Industry
2	Project Location	Between Port Alfred and Tsitsikamma
3	Project Owner / Driver	SAIMI offering skills training through the SEASI (Small Employers' Association for the Squid Industry
4	Brief Project Overview [Nature or function, primary purpose, service or clients, rationale]	To support the implementation of a skills development programme for the economically important squid fishery in the Eastern Cape in order to address challenges of gaps in scarce and critical skills and an ageing officer class; to develop skills in vessel maintenance, and to provide the necessary sea-time for new sea-going personnel to be certified; to provide employment opportunities for youth from designated groups; and to position the squid industry as an attractive employment opportunity with associated benefits for community socio-economic development and poverty alleviation.
		Current fishermen and unemployed youth from designated groups recruited into the industry.
		Skills training. This project targets an economically important fishery sector; and will enable personnel who have long been working in the industry at low levels, to achieve formal qualifications (ie watchkeeper/ mate, motorman/driver, and skipper) and move up through the ranks, as well as broadening the sector's base of qualified skills by providing qualifications to new entrants.
		SEASI has a particular interest in training and skills development to improve the human resources capacity of the squid industry, in which the officer corps on vessels are ageing (and predominantly white) and there is a lack of sufficiently skilled and qualified people to replace them as they move on. The industry thus needs to upskill its current employees to move up through the ranks and attract new entrants by offering solid career prospects. SEASI has in turn identified the need for new entrants as an opportunity to address youth unemployment in the squid industry's main areas of operation, from Port Alfred to Tsitsikamma.
5	Capital Value [R m]	R8 956 311.15 over a period of 3 years
6	Construction Start Date	N/A
7	Constructions Jobs p.a.	N/A
8	Operation Start Date	To commence during 2019
9	Operating Costs p.a.	N/A - this is training intervention at the cost indicated above.
10	Operating Jobs p.a.	1430 learners will be trained over the period



#	LABEL	NARRATIVE
11	Turnover or Value (GVA)	Earning potential of learners will improve as they move up the ranks and new entrants will earn a living
12	Economic Linkages	Economic development - exports / retailers
13	'Lever' to 'Unlock'	The project needs to be approved by the NMU Tender Adjudication Committee
14	Any Other Points	-
15	Project Map or Image, or both.	Between Port Alfred and Tsitsikamma



Table 78: TETA Small Business Support

#	LABEL	NARRATIVE
1	Project Name	TETA Small Business Support
2	Project Location	Eastern Cape
3	Project Owner / Driver	SAIMI is the Implementing Agent
4	Brief Project Overview [Nature or function, primary purpose, service or clients	Small business support to TETA registered small companies, registered to maritime Standard Industrial Classification (SIC codes).
	rationale]	small companies, registered to maritime Standard Industrial Classification (SIC codes).
		Appointment of SDF's and provision of training, mentoring and coaching to learners of registered companies.
		To increase small maritime registered companies to submit ATR/WSP to TETA and includes support to companies currently submitting but not receiving support.
		Increased skills and economic activity.
5	Capital Value [R m]	R900 000 over a period of 2 years for 36 companies in the E.C. (R25 000 per company)
6	Construction Start Date	N/A
7	Constructions Jobs p.a.	N/A
8	Operation Start Date	Started 2018
9	Operating Costs p.a.	N/A - this is training intervention at the cost indicated above.
10	Operating Jobs p.a.	36 companies - employments stats per company is not available
11	Turnover or Value (GVA)	Improved skills of employees, which will translate into improved operations and ultimately improved profits for companies. TETA will also benefit from statistics for reporting purposes - for results generated by companies who will now be participating in the ATR/WSP submissions to TETA.
12	Economic Linkages	Economic development - exports / retailers
13	'Lever' to 'Unlock'	N/A
14	Any Other Points	-
15	Project Map or Image, or both.	Eastern Cape



Table 79: CMBT Artisan Training

#	LABEL	NARRATIVE		
1	Project Name	Competency Based Modular Training for Artisans		
2	Project Location	Eastern Cape		
3	Project Owner / Driver	SAIMI through TVET Colleges / Training Providers		
4	Brief Project Overview [Nature or function, primary purpose, service or clients, rationale]	This intervention aims to provide training based on the Competency Based Modular Training (CBMT) Model to unemployed youth. This intervention aims to increase the employability of Trade related learners by completing the CBMT practical skills modules whilst completing their National Certificate (Vocational) Studies.		
		The programme will be piloted in selected coastal TVET colleges and SAIMI will be responsible for the implementation, monitoring and evaluation of this programme. This will include the identification of merSETA approved workplaces. Companies in the Marine Manufacturing space will be targeted for work placement opportunities.		
		Youth unemployment will be addressed.		
		Competency Based Modular Training (CBMT) in the Plumbing trade The project will provide opportunities for learners to become skilled through various streams. The approach to the programme will be practical, with achievable and relevant activities in place for learners to obtain practical experience and where theory is practised in an actual workplace environment.		
5	Capital Value [R m]	R774000 over a period of 9 months		
6	Construction Start Date	N/A		
7	Constructions Jobs p.a.	N/A		
8	Operation Start Date	To start in 2019/2020		
9	Operating Costs p.a.	N/A - this is a one-time training intervention at the cost indicated above, until successful they are either successfully employed.		
10	Operating Jobs p.a.	15		
11	Turnover or Value (GVA)	Earning potential of learners.		
12	Economic Linkages	Maritime and Marine sector / boatbuilding and repairs		
13	'Lever' to 'Unlock'	The project needs to be approved by the NMU Tender Adjudication Committee		
14	Any Other Points	-		
15	Project Map or Image, or both.	Nelson Mandela Metro, Eastern Cape		



Table 80: Mentorship Training

#	LABEL	NARRATIVE
1	Project Name	Mentorship Training – Artisans
2	Project Location	Eastern Cape
3	Project Owner / Driver	SAIMI through training provider Skills Priority CC
4	Brief Project Overview [Nature or function, primary purpose, service or clients, rationale]	To enhance artisan development in the Maritime Manufacturing sector. Artisans who are currently employed in the marine manufacturing sector. The focus of the training is on soft skills which includes mentoring and coaching of qualified artisans and people qualified in the marine manufacturing related occupations that have been identified. Candidates, which are currently employed in the marine manufacturing sector, will be trained to become skilled to mentor and coach staff, including artisanal candidates placed for experiential learning. The shortage of suitably qualified mentor artisans in the sector has been identified as a challenge. Improved workplace skills to the benefit of junior artisans – skills transfer.
5	Capital Value [R m]	R92 000 - 8 x PE learners (32 total nationally)
6	Construction Start Date	N/A
7	Constructions Jobs p.a.	N/A
8	Operation Start Date	Started and ended 2018
9	Operating Costs p.a.	N/A
10	Operating Jobs p.a.	N/A
11	Turnover or Value (GVA)	N/A
12	Economic Linkages	-
13	'Lever' to 'Unlock'	None - project completed
14	Any Other Points	-
15	Project Map or Image, or both.	Eastern Cape

12.7 HIGHER EDUCATION INSTITUTIONS FOR INNOVATION IN THE EASTERN CAPE

South African higher education institutions are classified into three major clusters based on the knowledge productivity or function of the university (Boshoff, 2010; Dube et al., 2017). There are currently 23 universities in South Africa which have been clustered into 3 categories, namely; red cluster, green cluster and blue cluster (Dube et al., 2017; Walter Sisulu University, 2019). Red cluster universities are those classified as research intensive universities, blue cluster universities are those classified as technical training institutions and green cluster universities; namely Nelson Mandela University, Rhodes University, Walter Sisulu University and University of Fort Hare. Of those institutions, Rhodes University is classified as a red cluster institution, Nelson Mandela University and University of Fort Hare are classified as a green cluster institutions and Walter Sisulu University is classified as a blue cluster institution (McGregor, 2010). The following section will provide a brief historical background of each of these institutions and their current status.

1. Nelson Mandela University (NMU)

The Nelson Mandela Metropolitan University was opened on the 1st of January 2005 as a result of a merger between PE Technikon, the University of Port Elizabeth and the Port Elizabeth campus of Vista University (Nelson Mandela University, 2019). The university currently has approximately 27 000 students and approximately 2 500 staff members which are based on six campuses between the Nelson Mandela Metropole and George (Nelson Mandela University, 2019). On the 20th of July 2017, the institutions was officially renamed as the Nelson Mandela University, 2019). The institutions prides itself in becoming an innovative 21st century institution of higher learning and seeks to reflect this in the manner in which they teach, learn, do research, engage with their communities and work and live as students, staff alumni and their partners (Nelson Mandela University, 2019).

2. Rhodes University

Rhodes University was founded in 1904 and is considered a small university with just over 8200 students (Mabizela, 2019). The university consists of 30% postgraduate students and over 18% international students from 54 countries all around the world (Mabizela, 2019). The university currently accommodates approximately 4000 students in 52 residences, and due to its size, is able to provide small classes with individualised attention (Rhodes University, 2017). The motto of the university is "Where leaders learn" and the institution prides itself on producing knowledgeable intellectuals, skilled professionals and critical, caring and compassionate citizens (Mabizela, 2019). Furthermore, the future of the institution is not centred around increased numbers, but on increasing academic excellence (Rhodes University, 2017).

3. University of Fort Hare

Initially named the South African Native College, the University of Fort Hare was founded in 1916 on a former British military stronghold (University of Fort Hare, 2019). The college was formed as a result of an alliance between the new class of educated African Christians at the time who were supported by traditional Southern African leaders, as well as early twentieth century white liberals (University of Fort Hare, 2019). The university has produced highly prominent political figures, such as Oliver Tambo, Nelson Mandela, Govan Mbeki, Robert Sobukwe and Mangosuthu Buthelezi in South Africa, Robert Mugabe and Herbet Chitepo in Zimbabwe and Elius Mathu and Charles Njonjo in Kenya (University of Fort Hare, 2019). Currently, the university prides itself on having excellent outputs, having produced 153 PhD students in 2018 (Buhlungu, 2019). Furthermore, they currently have 25 rated scholars and continued to identify and grow their research niche areas in order to ensure that the quality of their research output is constantly improving (Buhlungu, 2019).



4. Walter Sisulu University

The Walter Sisulu University was established on the 1st of July 2005 and named in honour of the South African liberation struggle icon, the late Walter Max Ulyate Sisulu (Walter Sisulu University, 2019). Walter Sisulu University has focused primarily as a developmental university targeting urban renewal and rural development (Walter Sisulu University, 2019). The university currently has over 30 000 students across 4 campuses located in Mthatha, Butterworth, Buffalo City and Queenstown (Walter Sisulu University, 2019). Walter Sisulu University aims to be a leading African comprehensive university which focuses primarily on innovative educational, research and community partnership programmes which align them with local, regional, national, continental and international imperatives (Walter Sisulu University, 2019).

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13 AN ECONOMIC OVERVIEW TO PROVIDE CONTEXT

13.1 AN ECONOMIC OVERVIEW OF SA, EC, SBDM, OTRDM THE NMB AND BCMM

13.1.1 Introduction

This chapter will provide a brief outline of the socio-economic characterises of South Africa, the Eastern Cape, Sarah Baartman District Municipality (SBDM), O.R. Tambo District Municipality (ORTDM), Nelson Mandela Bay Municipality (NMBM) and Buffalo City Metropolitan Municipality (BCMM). The purpose of this process is to understand and identify the social dynamics of the population and workforce in these areas and how they may potentially impact the competitiveness of these area's economies and the demand for goods and services.

The sub-section will be reviewed under the following headings:

- Population
- Household Numbers and Size
- Education Levels
- Household Income
- Access to Basic Services
- Dwelling Type
- Employment Profile
- Economic Profile

13.1.2 Population

Population is one of several variables that affect the economy and subsequently economic development. Understanding the population dynamics within an area is therefore critical when it comes to development as population changes impact:

- The demand for goods and services such as housing, water, sanitation and electricity
- · The need for certain types of infrastructure
- The size of the labour force

Table 1 below shows the total population, population growth rates between 2013 and 2018, and the percentage share of total population for each of the selected areas.



	POPULATION		DENSITY (PER KM²)	AVERAGE GROWTH RATE	
AREA		% SHARE		2017-2018	2013-2018
South Africa	57 725 606	-	47.3	1.56%	1.61%
Eastern Cape	6 522 734	11.3%	38.6	0.20%	0.32%
SBDM	463 931	7.1%	8.0	0.81%	0.94%
ORTDM	1 387 913	21.3%	114.7	0.55%	0.77%
NMBM	1 220 616	18.7%	623.1	1.07%	1.16%
ВСММ	785 775	12.0%	309.86	0.71%	0.82%

Table 81: Overview of Population Structure in 2018

Source: Quantec (2019)

From the table above it is evident that the four municipalities – Sarah Baartman, O.R. Tambo, Nelson Mandela Bay and Buffalo City – accounts for almost 60.0% of the total population of the Eastern Cape. An analysis of the growth rates of these municipalities indicate that their total population increased year-on-year, at a slower rate than the long-term averages. Of these three municipalities, the NMBM as the economic centre of the Eastern Cape, exhibited the fastest year-on-year (1.07%) and long-term (1.16%) population growth rates.

A review of the time series data suggests that, although the population of the Eastern Cape has increased, the average rate of this increase between 2015 and 2018 (0.17%) was lower than between 2011 and 2014 (0.19%).

This coupled with the fact that the average population growth rates for the Eastern Cape over both the short- and long-term, were lower than that of South Africa as a whole suggests that the province is characterised by outward migration to areas of greater economic opportunities.

13.1.3 Household Number and Size

The household growth rate as well as the number of households within an area serve as a metric by which to assess the impact and magnitude of any interventions in an area. Households also have a direct bearing on the production of the economy as their disposable income helps to determine the level of consumption of goods and services. The table below illustrates the total number of households, growth rate and average household size for the selected areas in 2018.

1 Of larger area i.e. Eastern Cape's share of the South African population; SBDM, ORTDM, NMBM. BCMM's share of the Eastern Cape population.



Table 82: Overview of Household's Structure in 2018

		AVERAGE HOUSE-	DENSITY	AVERAGE GROWTH RATE	
AREA	HUUSEHULDS	HOLD SIZE	(PER KM ²)	2017-2018	2013-2018
South Africa	16 092 377	3.6	13.2	1.86%	1.95%
Eastern Cape	1662642	3.9	9.8	0.49%	0.63%
SBDM	128 276	3.6	2.2	1.04%	1.20%
ORTDM	301 166	4.6	24.9	0.72%	0.97%
NMBM	341 868	3.6	174.5	1.35%	1.47%
BCMM	230 247	3.4	90.8	0.99%	1.14%

Source: Quantec (2019)

The household growth rates show a similar trend to that of population, with a positive growth rate being exhibited since 2013. The household growth rate in the Eastern Cape between 2013 and 2018 was lower than both the national average as well as that of the four local municipalities. This may suggest a potential increase in the demand for goods and services by households in SBDM, ORTDM, NMBM and BCMM.

The number of households in an area is influenced by a number of different factors including culture, traditions, education levels and income. Across all four municipalities, however, the absolute number of households has increased since 2013.

13.1.4 Education Levels

The level of education provision within an area is one of the main determinants when it comes to a locations ability to achieve long-term, positive economic growth. The provision of education alone however, does not ensure that this growth will occur. Equally important is ensuring that this education provision is of a sufficient quality to meet both the communities and the broader economy's needs.

Economic research also shows that there is a positive relationship between educational attainment and individual income, that is higher educational levels tend to result in higher individual incomes. Higher incomes in turn drive greater consumption spending which has a positive impact on an areas overall economic growth. Increased access to education also improves the ability of low-income earners to access economic opportunities and thereby participate in the broader economy.

Based on these factors, the level of education within an area determines and enables:

- Individual incomes
- Labour productivity
- Skills base and employability



The table below illustrates the educational attainment for the selected areas.

	SOUTH AFRICA	EASTERN CAPE	SBDM	ORTDM	NMBM	всмм
No schooling	13.9%	12.6%	10.4%	16.5%	6.9%	8.6%
Some Primary	0.3%	29.9%	28.4%	34.8%	19.0%	21.7%
Completed Primary	6.9%	6.5%	7.7%	6.3%	5.3%	5.9%
Some Secondary	40.3%	31.4%	32.3%	28.6%	36.2%	33.8%
Matric	27.0%	13.6%	15.1%	9.7%	23.0%	19.7%
Tertiary	11.7%	5.9%	6.1%	4.1%	9.6%	10.3%

Table 83:Level of Education Attainment in Selected Areas in 2018

Source: Quantec (2019)

It is evident from the table above that the skill level of the population, as measured by educational attainment, is notably poorer in the Eastern Cape than in the rest of South Africa. There has however, been a marginal improvement in educational attainment since 2013 when only 5.4% of Eastern Cape's population had attained some form of tertiary qualification.

Unlike the rest of the Eastern Cape, the Sarah Baartman, Nelson Mandela Bay and Buffalo City Municipalities were characterised by high levels of educational attainment, with almost 7.0% of the population in these areas having attainted some form of tertiary qualification in 2018. This is well above the Eastern Cape figure and is likely attributable to the presence of universities in NMBM and BCMM, and the proximity of the SBDM to universities in the NMBM. Despite this, over two thirds of the population of the four municipalities has not completed high school, slightly higher than the national (61.3%) figure. This situation is most severe in ORTDM, where 86.2% of the population has not completed high school. These levels of educational attainment suggest the need for interventions that targeted low and semi-skilled individuals.

13.1.5 Household Income and Expenditure

As income is the means by which people are able to meet their basic needs. It is therefore important to understand the income trends within an area. Furthermore, increases in income have a positive impact on the standard of living of individuals, households and communities in an area. There is also a direct link between household income and economic growth, as higher incomes lead to greater demand for goods and services (i.e. increased household expenditure), resulting in increased production and subsequently a change in the size of the economy. Increases in disposable income coupled with a low interest rate environment stimulates an increase in the consumption expenditure of households, particularly on durable and semi-durable goods (e.g. transport equipment and related transport expenditure). This in turn has a positive impact on the economy of the country.



To analyse the average amount of income available to people, the weighted average household income for each of the selected areas was calculated (see Table below).

This average annual weighted household income is defined as the combined income of all members of a household, the determination of which includes:

- Labour remuneration,
- Income from property, and
- Transfers from government (including pensions).

Table 84: Weighted Average Annual Household Income in 2018 Prices

	2001	2011
South Africa	R127 813	R160 141
Eastern Cape	R78 840	R100 607
SBDM	R107 006	R119 415
ORTDM	R54 822	R69 317
NMBM	R144 620	R162 429
ВСММ	R107 669	R151 194

Source: Calculations based on Census 2001 and Census 2011 (2019)

The table above shows the average annual household income for each respective area in both 2001 and 2011, adjusted to 2018 prices. The Nelson Mandela Bay Municipality has a higher average household income than both the provincial and national values, with the municipality's average household income exceeding the provincial figure by 61.4%. This is likely attributable to the greater concentration of economic activity in the municipality relative to the rest of the province. This is followed by BCMM, whose average household income was 50.3% higher than the provincial figure, but lower than the national average.

The O.R. Tambo District Municipality's household income in contrast, is well below the Eastern Cape and South African values. This suggests that there are fewer economic opportunities available in the area relative to other parts of the province.

Positively, in absolute terms, the Eastern Cape's average annual weighted household income has increased by 27.6% since 2001 compared to 25.3% for the rest of South Africa. This is likely a product of increased interventions by government in the area that focus on improving household's economic wellbeing.

In addition to the weighted household income, it is also beneficial to consider the household income distribution within the Eastern Cape relative to the rest of South Africa.




Figure 25: Annual Household Income Distribution in SA and EC, 2011

Source: Calculations based on Census 2011 (2019)

shows that approximately 74.0% of households in the Eastern Cape earned less than R38,400 per annum (R3,200 per month) in 2011, relative to 62.8% of households in the rest of South Africa. These households are classified as indigent (i.e. unable to access basic services) and in need of some form of state support. The fact that over two thirds of the households in the Eastern Cape were earning below R3,200 per month suggests a very high rate of poverty and a significant demand for additional income sources in the province.

The large proportion of people that receive very little or no income is an indication of the need to increase the degree of economic activity within the Eastern Cape. This increase in economic activity will in turn have a positive impact on job creation. Higher employment levels within the study areas will also positively impact worker incomes, and improve living standards.



13.1.6 Access to Basic Services

National legislation as well as a municipality's basic services policy recognises the need to prioritise access to basic services (water, sanitation, refuse removal and electricity) to all residents of an area, but particularly the poor and indigent households. The intention of this legislation and policies are to ensure that households enjoy a decent standard of living in line with the requirements of national legislation.

Table 85: Access to Minimum Basic Services in 2018

		PERCENTAGE OF HO	USEHOLDS IN 2018 W	ITH ACCESS TO:	
AREA	OF HOUSEHOLDS	WATER ¹	ELECTRICITY ²	SANITATION ³	REFUSE REMOV- AL⁴
South Africa	16 092 377	85.9%	85.3%	61.9%	65.4%
Eastern Cape	1662642	68.7%	75.6%	44.5%	44.9%
SBDM	128 276	93.8%	87.4%	74.2%	80.5%
ORTDM	301 166	37.3%	70.4%	11.8%	11.7%
NMBM	341 868	96.5%	90.8%	89.7%	91.7%
BCMM	230 247	89.8%	81.2%	71.5%	71.4%

Source: Quantec (2019)

In 2018, 68.7% of households in the Eastern Cape had access to piped water, well below the national average of 85.2%. This was higher in NMBM, SBDM and BCMM but lower in ORTDM. Accordingly, over 340 000 households in the Eastern Cape were dependent on either boreholes or natural sources, such as dams, rivers and streams. Access to piped water was particularly poor in ORTDM due to its rural character. The result was that 49.3% of households were dependent on either boreholes or natural sources – one of the highest levels in the province. On average 93.4% of households across NMBM, SBDM and BCMM had access to piped water in 2018. The high level of access can be attributed to the additional resources available within NMBM and BCMM as well the emphasis that these municipal governments has placed on expanding access in low income areas. The low population density in the SBDM, in contrast, likely contributed its high level of access. It however should be noted that these figures do not speak to the quality and reliability of this access. Electricity is the most popular energy source amongst Eastern Cape households, with 75.6% of the province's households making use of this type of energy for lighting in 2018. Electricity access is exceptionally high across NMBM, SBDM and BCMM but particularly in NMBM. This was evident by the fact that most (90.8%) households in this municipality use electricity as their primary means of lighting. This level of access is higher than both the provincial and national figures. The Eastern Cape has however, only increased access to electricity at an average annual rate of 1.9% between 2013 and 2018 compared to a rate 2.6% for the rest of South Africa.

⁴ Access to refuse removal is measured by household's ability to access refuse collection services from a local authority in line with the National Waste Management Strategy.



¹ This includes all households that have piped water inside their dwelling, within their yard, or less than 200 metres from their dwelling.

² Access to electricity is measured by the number of households that use electricity as their main source of lighting.

³ In line with the Department of Water Affairs Water Services Reference Framework, adequate sanitation is defined as access to a waterborne flush toilet, a toilet that utilises a septic/conservancy tank and chemical toilets (i.e. non-waterborne VIPs).

Flush and chemical toilets are the most widely used sanitation type in most areas, with the majority of households in NMBM (89.7%), SBDM (74.2%) and BCMM (71.5%) having access to this minimum national sanitation standard in 2018. Over the last five years, the Eastern Cape has made positive strides in improving access to sanitation across the province. Between 2013 and 2018, the number of households that either had no access to sanitation or were dependant on bucket latrines decreased at an average annual rate of 1.5% and 4.5% respectively.

Approximately 44.9% of households in the Eastern Cape have periodic refuse removal services provided by a municipal authority in 2018. This was notably higher in the NMBM (91.7%), SBDM (80.5%) and BCMM (71.4%) than in the ORTDM (11.7%). Accordingly,

856 536 households (51.5%) in the Eastern Cape had either no refuse removal services (181 916 households; 10.9%) or were dependant on their own refuse dump (674 620 households; 40.6%). Despite this low level of access, the number of households in Eastern Cape with no refuse removal services fell by 1.4% year-on-year between 2013 and 2018.

13.1.7 Dwelling Type

The South African Constitution states that every citizen has the right to access adequate housing. The Constitution further places an obligation on the state to promulgate legislation to realise this right. It further states that this right should be progressively realised, in that it should be achieved given the available resources. Despite this obligation many South Africans still lack access to adequate housing.

			INFORMAL		
AREA	FORMAL	SHACK IN BACKYARD	SHACK, NOT IN BACKYARD⁵	TRADITION- AL	FORMAL HOUSING
South Africa	12 589 578	800 267	1 395 170	1 165 262	78.9%
Eastern Cape	1062698	34 067	95 703	455 504	64.5%
SBDM	110 275	5 035	8 935	2 719	86.9%
ORTDM	131 233	1 799	2 570	163 049	43.9%
NMBM	299 251	9 088	30 619	1 180	88.0%
BCMM	167 709	11 063	39 417	10 405	73.4%

Table 86: Access to Housing by Dwelling Type in 2018

Source: Quantec (2019)

The total number of dwellings in the Eastern Cape increased by an estimated 54,087 between 2013 and 2018. Over this period the number of formal structures increased by 79,503, while the number of informal and traditional structures declined by 25,416. This is equivalent to an average annual growth rate of 1.6% for formal dwellings and -0.8% for informal and traditional dwellings. In contrast, the number of formal dwellings in the four municipalities increased from 640,343 in 2013 to 708,467 in 2018, while informal and traditional dwellings decreased from 293,715 to 285,878 over the same period. The corresponding growth rates were 2.0% and -0.5% respectively.



⁵ For example, a shack situated in an informal/squatter settlement or on a farm.

When considering the percentage changes between 2013 and 2018, the proportion of households in Eastern Cape with access to formal dwellings increased from 61.7% to 64.5% and the proportion of people in informal dwellings decreased from 8.6% to 7.9%. The proportion of people living in traditional households likewise declined from 29.7% to 27.6%. While the percentage of households with access to formal housing increasing marginally between 2013 and 2018, a significant need still exists.

13.1.8 Employment

The composition of the local labour force is presented for South Africa, the Eastern Cape as well as for the Sarah Baartman District Municipality, O.R. Tambo District Municipality, Nelson Mandela Bay Municipality and Buffalo City Metropolitan Municipality. This information illustrates the demand for employment within these respective areas. It also indicates whether the current supply of job seekers is sufficient to meet the needs of future investments.

The table below provides the labour force profile of South Africa, the Eastern Cape, SBDM, ORTDM, NMBM, and BCMM. For the purposes of Table 7, the following indicators are considered:

- Working Age Population: Includes all individuals between the ages of 15 and 65.
- Employed: People who within the last seven days performed work for pay.
- Unemployed: Those people within the economically active population who: did not work during the seven days prior to
 the interviews; want to work and are available to start work within two weeks of the interview; and have taken active
 steps to look for work or to start some form of self-employment in the four weeks prior to the interview.
- Non-Economically Active and discouraged work seekers: A person who is not working, not actively seeking work and not available for work.
- Labour Force Participation Rate: The proportion of the working-age population that belongs to the labour force (is either employed or unemployed).
- Labour Force: Includes those in the working age population who are either employed or unemployed.
- Unemployment Rate: The proportion of the labour force that is unemployed.

Table 87: Labour Force Profile for Selected Areas in 2018

	SOUTH AFRICA	EASTERN CAPE	SBDM	KSD	NMBM	всмм
Working Age Population	37 410 897	3 866 839	305 398	747 310	813 281	526 954
Employed	16 242 230	1240 947	156 102	142 306	365 756	214 704
Unemployed	6 516 939	659 732	40 288	113 669	171 102	111 161
Not Economically Active	14 651 728	1 966 161	109 008	491 334	276 423	201705
Labour Force Participation Rate	60.8%	49.2%	64.3%	34.3%	66.0%	61.8%
Labour Force	22 759 169	1900 679	196 390	255 975	536 859	325 865
Unemployment Rate	28.6%	34.7%	20.5%	44.4%	31.9%	34.1%

Source: Quantec (2019)



The data presented in Table 7 above indicates that over a third (34.7%) of the labour force in the Eastern Cape was unemployed, which was significantly higher than the South African (28.6%) figure. The unemployment rate in the NMBM and BCMM, while lower than the provincial average (34.7%) is higher than the national figure of 28.6%. This figure implies a high demand for employment opportunities across all NMBM, BCMM and ORTDM but more specifically in the latter, where the unemployment rate exceeds the provincial and national averages by over 10.0%. The SBDM, unemployment rate, in contrast, is over 10.0% lower than the provincial average.

In addition to exhibiting a high level of unemployment, the Eastern Cape's unemployment rate has increased, although marginally, from 2013, when 33.2% of the labour force was classified as unemployed. In comparison, the overall South African unemployment rates increased by 3.9% and over the same period.

The high unemployment rate in the Eastern Cape as well as in three of the four focus municipalities is indicative of a high proportion of discouraged workers rather than strong employment creation. Worker discouragement can result from one of the following factors:

- Poor skill levels and skills mismatch
- Large percentage of the population that is classified as new entrants into the labour market (given the youthful
 demographic profile of the Eastern Cape where 32.9% of the population are between the ages of 15 and 35 years old)
- Barriers to entry into the job market (technical, geographical and financial)
- Comparable low wages in the Eastern Cape in comparison to the wages commanded in other parts of the South Africa such as in the Western Cape and Gauteng.

While employment statistics are poor for in the Eastern Cape as well as in NMBM and BCMM, of concern is ORTDM, where it is evident that there is inadequate economic activity for the creation of a sufficient number of jobs for the population.

13.1.9 Economic Profile

The following sub-section explores the general economic conditions in the Sarah Baartman, O.R. Tambo, Nelson Mandela Bay and Buffalo City Metropolitan Municipalities in the context of the Eastern Cape and South Africa. The intention of this assessment is to provide a high-level economic overview of both economies to contextualise the potential impact of any future development in the selected areas. The present state of the various economic sectors that comprise the relevant economies will also be discussed. The intention of this process is to understand the dominant features by which these areas are characterised.

13.1.9.1 Economic Growth

Economic growth refers to the increase in the market value of goods and services produced by a particular economy over time. This economic growth is measured as the percentage increase in the real gross domestic product, or real GDP. An increase in the GDP growth is driven by a range of factors some of which include technology change, more efficient use of inputs, growth in the capital stock, and improvements in the quality and level of education of the workforce. The increased focus on sustainable development in recent years has also led to the inclusion of aspects such as the use of environmentally sound processes into the economic growth model. Table 8 illustrates the real GDP value (in millions of Rand) for the various areas.



Table 88: Gross Value Added (GVA) and Real GDP (2010 Prices) in 2018

	GVA (R	, MILLIONS)	REAL GDF	P (R, MILLIONS)
AREA	2018	AVERAGE ANNUAL GROWTH RATE (2013 – 2018)	2018	AVERAGE ANNUAL GROWTH RATE (2013 - 2018)
South Africa	R2 859 600	1.2%	R2 923 514	1.2%
Eastern Cape	R214 384	0.9%	R219 422	1.0%
SBDM	R19 130	1.1%	R19 595	1.2%
KSD	R21 611	1.4%	R22 114	1.5%
NMBM	R82 812	0.6%	R84 815	0.7%
BCMM	R41 681	0.3%	R42 685	0.4%

Source: Calculations based on Quantec (2019)

The Eastern Cape's real GDP was approximately R219.4 billion in 2018, a 1.0% increase from the 2017 figure. Although the provincial economy grew in real terms, the Eastern Cape's overall share of national GDP declined by 0.1% to 7.5% between 2013 and 2018. Over the 2013 to 2018 period the Eastern Cape economy underperformed the national growth rate, growing by only 1.0% compared to a national growth rate of 1.2% over the same period.

The four municipalities accounted for approximately 77.1% of the total GDP of the Eastern Cape in 2018 equivalent to R169.2 billion (real 2010 prices). The Nelson Mandela Bay Municipality was the primary driver of the provincial economy, contributing R84.8 billion to province's total GDP in 2018. This represents 38.7% of the Eastern Cape's total GDP. Despite this, the Eastern Cape's GDP growth rate underperformed both the Eastern Cape and South Africa, growing at 0.7% year-on-year between 2013 and 2018 compared to 1.0% and 1.2% for the Eastern Cape and South Africa respectively.

From 2010, the six areas have generally shown a similar GDP growth pattern. Although similar to the other areas trends, ORTDM's GDP growth rate has been notably higher than the other areas. From 2013 to 2018, ORTDM's GDP has generally exhibited higher growth than the provincial and national GDP, suggesting that the municipality has been more insulated from the global economic slowdown than the other areas. Since 2016 the GDP of the Eastern Cape, SBDM, ORTDM, NMBM and BCMM has recovered somewhat, although the growth rates are still well below those recorded between pre-2008. Economic growth in the Eastern Cape has generally underperformed relative to the rest of South Africa throughout the period, despite strong growth by several of its municipalities. This suggests the need for ongoing investment to ensure that the local economy continues to grow.





Figure 26: GDP Growth Rate Per Selected Areas

Source: Calculations based on Quantec (2019)

The recovery in the GDP of the Eastern Cape in recent years is an encouraging sign, as a growing GDP growth rate indicates that the economy has the potential to sustain further investment. The Eastern Cape should therefore continue its investment attraction and facilitation activities as these are likely to further improve the economic growth prospects of the area.

13.1.9.2 Economic Structure

In order to identify an areas strengths and weaknesses it is necessary to understand the economic structure of the economy. This knowledge assists investors in making informed decisions about which sectors to invest in as well as empowering policy makers in deciding on which sectors are best to target for interventions. Knowledge of the economic structure of the economy can also assist in determining the economic impact resulting from investments and expenditure in specific sectors. The figure below illustrates the contribution of each economic sector in the Eastern Cape's economy, while the table below illustrates the economic structure of each of the respective areas.





Figure 27: Eastern Cape's GVA Sectoral Contribution (R, Millions) 2018

Source: Calculations based on Quantec 2011 (2019)



Table 89: Percentage Share of Total GVA per Economic Sector in 2018

	SOUTH AFRICA	EASTERN CAPE	SBDM	ORTDM	NMBM	ВСММ
PRIMARY	10.7%	1.9%	6.5%	1.9%	0.5%	1.1%
Agriculture	2.6%	1.6%	6.4%	1.0%	0.5%	1.0%
Mining	8.1%	0.3%	0.1%	0.9%	0.1%	0.1%
SECONDARY	19.6%	18.6%	20.1%	8.9%	25.1%	19.1%
Manufacturing	13.5%	13.6%	13.9%	3.8%	21.0%	13.5%
Electricity and Water	2.3%	1.2%	1.5%	1.5%	0.8%	1.4%
Construction	3.8%	3.8%	4.7%	3.5%	3.3%	4.2%
TERTIARY	69.7%	79.5%	73.5%	89.2%	74.3%	79.8%
Trade	15.1%	19.5%	21.2%	18.6%	19.0%	22.0%
Transport & Communication	9.6%	8.9%	7.7%	7.0%	11.6%	8.2%
Finance and Business Services	22.4%	20.6%	20.1%	17.9%	23.3%	22.3%
General Government	16.7%	22.9%	17.5%	35.7%	15.2%	19.4%
Community Services	6.0%	7.5%	7.0%	10.2%	5.1%	7.9%

Source: Calculations based on Quantec (2019)

The table above clearly illustrates that the majority of economic activity across all six areas occurs in the tertiary sectors. On average more than 70.0% of the total GVA of each study area is derived from tertiary activities, with a further 18.0% of GVA derived from secondary activities. The importance of the manufacturing sector in the Eastern Cape is clearly highlighted in the table above. The dominant manufacturing sub-sector in the Eastern Cape, but particularly in NMBM and BCMM, is transport equipment (i.e. the manufacture of motor vehicles and automotive components). This sub-sector accounts for 21.1%, 27.9%, and 13.6% of the Eastern Cape's, NMBM and BCMM's total manufacturing GVA in 2018 respectively.

While some economic sectors may have high GVA contributions they may have low employment multipliers (i.e. only employ a few people) and visa-versa. Thus, when unpacking the economic structure of an area it is important to also consider the sectoral employment composition. Table 10 illustrates the composition of formal employment for each of the respective areas by economic sector.

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	SOUTH AFRICA	EASTERN CAPE	SBDM	ORTDM	NMBM	ВСММ
PRIMARY	10.6%	8.3%	27.2%	5.1%	2.5%	4.6%
Agriculture	6.9%	8.1%	27.1%	4.5%	2.4%	4.5%
Mining	3.7%	0.2%	0.0%	0.6%	0.0%	0.1%
SECONDARY	15.6%	13.8%	11.9%	7.3%	21.4%	14.4%
Manufacturing	9.9%	8.7%	6.7%	2.5%	16.6%	8.8%
Electricity and Water	0.5%	0.4%	0.4%	0.5%	0.3%	0.4%
Construction	5.2%	4.8%	4.8%	4.3%	4.5%	5.1%
TERTIARY	73.7%	77.9%	60.9%	87.7%	76.1%	81.0%
Trade	18.1%	18.2%	15.7%	16.7%	21.4%	20.5%
Transport & Communication	3.9%	3.0%	2.3%	2.5%	4.5%	2.9%
Finance and Business Services	19.0%	13.4%	10.0%	12.2%	17.4%	15.6%
General Government	16.0%	23.0%	15.3%	31.8%	17.3%	22.0%
Community Services	16.7%	20.2%	17.7%	24.5%	15.6%	20.1%

Table 90: Percentage Share of Total Formal Employment per Economic Sector in 2018

Source: Calculations based on Quantec (2019)

As evident from the table above, the employment structure of the respective areas follows a similar pattern to that of their GVA contribution. There are however, some notable exceptions. For example, while the manufacturing sector accounts for approximately 13.6% of the GVA of Eastern Cape, only 8.7% of the formally employed labour force in the province works in this sector. In contrast, the construction sector in the Eastern Cape and the four municipalities only contributes +/- 3% of the GVA of these areas but accounts for between 4.8% and 5.1% of all formal employment. This suggests that investments in the construction sector, while having a limited impact of the GVA of an area, will have a significantly impact on employment creation.

The table also highlights the importance of the community services sector, and to a lesser extent the general government sector to employment in the Eastern Cape and particularly ORTDM. The community services sector, which includes those individuals employed in the healthcare and education sub-sectors, is a particularly important employer in ORTDM. This sector accounts for 24.5% of all formal employment, making it the largest employer in the municipality.



13.1.10 Synthesis

The socio-economic profile indicates that the Eastern Cape, and to a greater extent the four municipalities, face a number of serious challenges. Education levels and, as a consequence, skill levels in Eastern Cape is particularly poor, negatively impacting on the type of industries and sectors which can be developed in the province. Furthermore, moderate levels of household income and high unemployment means that it is likely that the next generation of workers in the Eastern Cape will be largely unskilled.

Combining this with the fact that a notable percentage (34.3%) of the Eastern Cape's population is under the age of 14 and will be entering the labour market in the next 10 years, it is unlikely that existing industries in the area will be able to absorb these workers and remain profitable should the status quo remain.

To have a significant and sustainable impact on the socio-economic characteristics of the Eastern Cape, industries which are labour intensive, and that require unskilled workers should be prioritised. Additionally, skilled labour from outside the area would initially have to be brought into the area due to the existing low skills levels.

The economies of the Eastern Cape as well as SBDM, ORTDM, NMBM and BCMM are dominated by the manufacturing and community services sectors in terms of both economic output and employment. Other important sectors are the trade and general government sectors, with these sectors accounting for +/- 41% of the Eastern Cape's total GVA and formal employment respectively. The construction sector, while contributing approximately 3.8% of total GVA in the Eastern Cape is an important employer. This suggests that any construction related developments in the respective areas is likely to have a strong positive impact on the unemployment situation that characterise the Eastern Cape.

The strong but low real GDP growth rates of the Eastern Cape between 2013 and 2018 relative to the rest of South Africa suggests a need for further interventions in the province. Higher economic growth in the Eastern Cape will subsequently have a positive impact on household income, economic well-being, poverty and unemployment.



Regional Output and GVA at basic prices by industry

13.2 REGIONAL OUTPUT AND GVA (CONSTANT 2010 PRICES) PER INDUSTRY - SA & EC

Real Gross value a	dded at basic prices, R millions constant 2010 prices												20	13-2018
South Africa	GVA in R millions, Constant 2010 Prices	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	%	6∆ p.a.
	Total - Economic Sectors	2,459,234	2,424,049	2,494,856	2,574,973	2,632,579	2,699,874	2,752,405	2,784,040	2,797,722	2,838,420	2,859,600	100%	1.18%
	Agriculture, forestry and fishing	67,072	65,802	65,605	66,913	68,093	71,143	75,982	71,515	64,305	77,857	74,157	2.6%	0.85%
	Mining and quarrying	230,663	218,830	230,350	228,646	221,990	230,772	226,791	234,247	225,035	234,522	230,514	8.1%	-0.02%
	Manufacturing	378,963	338,691	358,698	369,581	377,330	381,173	382,498	380,780	383,902	383,188	386,883	13.5%	0.30%
	Electricity, gas and water	67,522	66,337	67,940	68,978	68,733	68,289	67,622	66,364	64,956	65,329	65,932	2.3%	-0.69%
	Construction	87,300	94.759	95,453	95,860	98.330	102.818	106.403	108,361	109,640	109,008	107,665	3.8%	0.94%
	W holesale and retail trade, catering and accommodation	358,880	354,870	370,580	385,696	400,938	408,968	414,826	423,365	430,406	429,224	431,669	15.1%	1.11%
	Transport, storage and communication	226,135	225,710	229,497	237,441	243,187	250,127	258,904	262,456	265,361	268,991	273,191	9.6%	1.84%
	Finance, insurance, real estate and business services	511,715	517,113	523,524	545,800	562,040	576,705	592,349	604,764	616,299	628,970	640,365	22.4%	2.21%
	General government	381,768	393,921	404,647	423,833	436,466	450,348	464,664	468,396	471,158	472,497	478,693	16.7%	1.26%
	Community, social and personal services	149,216	148,015	148,561	152,226	155,472	159,531	162,367	163,791	166,659	168,834	170,530	6.0%	1.38%
South Africa	Contribution by sector - Percentage	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
	Agriculture, forestry and fishing	2.7	2.7	2.6	2.6	2.6	2.6	2.8	2.6	2.3	2.7	2.6		
	Mining and quarrying	9.4	9.0	9.2	8.9	8.4	8.5	8.2	8.4	8.0	8.3	8.1		
	Manufacturing	15.4	14.0	14.4	14.4	14.3	14.1	13.9	13.7	13.7	13.5	13.5		
	Electricity, gas and water	2.7	2.7	2.7	2.7	2.6	2.5	2.5	2.4	2.3	2.3	2.3		
	Construction	3.5	3.9	3.8	3.7	3.7	3.8	3.9	3.9	3.9	3.8	3.8		
	W holesale and retail trade. catering and accommodation	14.6	14.6	14.9	15.0	15.2	15.1	15.1	15.2	15.4	15.1	15.1		
	Transport, storage and communication	9.2	9.3	9.2	9.2	9.2	9.3	9.4	9.4	9.5	9.5	9.6		
	Finance, insurance, real estate and business services	20.8	21.3	21.0	21.2	21.3	21.4	21.5	21.7	22.0	22.2	22.4		
	General dovernment	15.5	16.3	16.2	16.5	16.6	16.7	16.9	16.8	16.8	16.6	16.7		
	Community social and personal services	6.1	6.1	6.0	5.9	5.9	5.9	5.9	5.9	6.0	5.9	6.0		
													50	13-2018
Eastern Cape	GVA in R millions, Constant 2010 Prices	2008	2009	2010	2011	2012	2013	2014	2015	2016 🕈	2017	2018	%	6∆ p.a.
	Total - Economic Sectors	189,068	187,788	192,148	198,420	202,520	205,401	208,248	209,925	211,435	212,749	214,384	7%	0.87%
	Agriculture, forestry and fishing	3,125	3,092	3,141	3,487	3,594	3,746	3,850	3,625	3,039	3,599	3,454	1.6%	-1.56%
	Mining and guarrying	598	552	587	601	635	647	678	645	630	655	638	0.3%	-0.26%
	Manufacturing	28.198	26.172	27.317	28.266	28.782	28.974	28.879	28.754	28.880	28.833	29.121	13.6%	0.10%
	Electricity, das and water	2.574	2,609	2.629	2.666	2.679	2.563	2.548	2.512	2.471	2.491	2.500	1.2%	-0.49%
	Construction	6,843	7.624	7.527	7,544	7.720	8,035	8.187	8,305	8,366	8.301	8,190	3.8%	0.39%
	W holesale and retail trade. catering and accommodation	36,654	36,056	37,517	38,885	40.276	40,693	41.027	41.522	41,886	41.712	41.870	19.5%	0.58%
	Transport, storage and communication	16,272	16,328	16,540	17,017	17,379	17,696	18,150	18,371	18,590	18,847	19,083	8.9%	1.57%
	Finance, insurance, real estate and business services	37,589	37,352	37,585	38,899	39,812	40,960	41,906	42,442	43,133	43,644	44,204	20.6%	1.58%
	General government	42,738	43,610	44,856	46,229	46,465	46,589	47,390	48,016	48,556	48,645	49,148	22.9%	1.10%
	Community, social and personal services	14,477	14,393	14,448	14,825	15,178	15,499	15,632	15,733	15,884	16,022	16,175	7.5%	0.87%
Eastern Cape	Contribution by sector - Percentage	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
	Agriculture, forestry and fishing	1.7	1.6	1.6	1.8	1.8	1.8	1.8	1.7	1.4	1.7	1.6		
	Mining and quarrying	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
	Manufacturing	14.9	13.9	14.2	14.2	14.2	14.1	13.9	13.7	13.7	13.6	13.6		
	Electricity, gas and water	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2		
	Construction	3.6	4.1	3.9	3.8	3.8	3.9	3.9	4.0	4.0	3.9	3.8		
	W holesale and retail trade, catering and accommodation	19.4	19.2	19.5	19.6	19.9	19.8	19.7	19.8	19.8	19.6	19.5		
	Transport, storage and communication	8.6	8.7	8.6	8.6	8.6	8.6	8.7	8.8	8.8	8.9	8.9		
	Finance, insurance, real estate and business services	19.9	19.9	19.6	19.6	19.7	19.9	20.1	20.2	20.4	20.5	20.6		
	General government	22.6	23.2	23.3	23.3	22.9	22.7	22.8	22.9	23.0	22.9	22.9		
	Community, social and personal services	7.7	7.7	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		

Community, social and personal services Source: Quantec Data, as at April 2019

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ESTABLISHING A SUSTAINABLE OCEANS ECONOMY IN THE EASTERN CAPE

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Regional Output and	GVA at basic prices by Manufacturing Industry													
Real Gross value add	ed at basic prices, R millions constant 2010 prices	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	% %	13-2018 6∆ n.a
South Africa	Total - Manufacturing Sectors	378,963	338,691	358,698	369,581	377,330	381,173	382,498	380,780	383,902	383,188	386,883	100.0%	0.30%
	Food, beverages and tobacco products	77,647	73,838	79,364	77,291	78,080	77,176	79,198	80,875	80,099	81,658	85,930	22.2%	2.27%
	Textiles, clothing and leather goods	11,151	11,273	11,907	11,559	11,544	12,067	12,076	11,877	11,730	11,193	11,054	2.9%	-1.68%
	W ood and paper; publishing and printing	32,014	28,376	31,097	31,646	32,182	32,403	32,682	32,400	33,350	32,326	30,996	8.0%	-0.87%
	Fuel, petroleum, chemical and rubber products	82,824	78,584	81,478	87,889	92,536	93,916	94,423	93,853	97,838	94,429	91,614	23.7%	-0.49%
	Other non-metal mineral products	19,529	14,902	16,635	17,481	17,398	17,605	16,720	16,441	16,197	15,875	16,467	4.3%	-1.29%
	Metal products, machinery and household appliances	84,403	66,710	69,568	72,590	72,266	74,330	72,728	69,209	68,717	71,556	74,460	19.2%	0.03%
	Electrical machinery and apparatus	8,570	8,209	8,486	8,670	8,930	9,557	9,371	10,023	9,975	9,077	8,992	2.3%	-1.18%
	Radio, TV, instruments, watches and clocks	4,856	4,621	4,820	5,318	5,538	5,644	6,214	5,991	6,477	6,359	5,902	1.5%	0.92%
	Transport equipment	28,792	25,786	27,701	29,553	30,323	29,983	30,499	32,197	31,959	31,773	30,780	8.0%	0.53%
	Furniture and other items NEC and recycling	29,178	26,392	27,642	27,585	28,533	28,493	28,585	27,914	27,560	28,943	30,687	7.9%	1.54%
South Africa		2000	2,12	2010	2011 202	2012	2015 22	2014	GI UN	2010	2011/ 21.02	20102		
	Food, beverages and tobacco products	20.5	21.8	22.1	20.9	20.7	20.2	20.7	21.2	20.9	21.3	22.22		
	Textiles, clothing and leather goods	2.9	3.3	3.3	3.1	3.1	3.2	3.2	3.1	3.1	2.9	2.9		
	W ood and paper; publishing and printing	8.4	8.4	8.7	8.6	8.5	8.5	8.5	8.5	8.7	8.4	8.0		
	Fuel, petroleum, chemical and rubber products	21.9	23.2	22.7	23.8	24.5	24.6	24.7	24.6	25.5	24.6	23.7		
	Other non-metal mineral products	5.2	4.4	4.6	4.7	4.6	4.6	4.4	4.3	4.2	4.1	4.3		
	Metal products, machinery and household appliances	22.3	19.7	19.4	19.6	19.2	19.5	19.0	18.2	17.9	18.7	19.2		
	Electrical machinery and apparatus	2.3	2.4	2.4	2.3	2.4	2.5	2.5	2.6	2.6	2.4	2.3		
	Radio, TV, instruments, watches and clocks	1.3	1.4	1.3	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.5		
	Transport equipment	7.6	7.6	7.7	8.0	8.0	7.9	8.0	8.5	8.3	8.3	8.0		
	Furniture and other items NEC and recycling	7.7	7.8	7.7	7.5	7.6	7.5	7.5	7.3	7.2	7.6	7.9		
													20	13-2018
Eastern Cape	GVA in R millions, Constant 2010 Prices	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	%	6∆ p.a.
Eastern Cape	Total - Manufacturing Sectors	28,198	26,172	27,317	28,266	28,782	28,974	28,879	28,754	28,880	28,833	29,121	100.0%	0.10%
	Food, beverages and tobacco products	6,005	5,903	6,299	6,253	6,409	6,383	6,543	6,628	6,598	6,826	7,291	25.0%	2.85%
	Textiles, clothing and leather goods	965	976	666	956	958	1,030	1,024	985	977	925	920	3.2%	-2.14%
	W ood and paper; publishing and printing	1,758	1,552	1,680	1,772	1,839	1,880	1,924	1,949	2,080	2,066	1,981	6.8%	1.07%
	Fuel, petroleum, chemical and rubber products	5,110	4,905	4,935	5,254	5,356	5,398	5,291	5,153	5,288	5,065	4,936	16.9%	-1.71%
	Other non-metal mineral products	1,573	1,235	1,356	1,435	1,442	1,472	1,387	1,344	1,322	1,311	1,374	4.7%	-1.33%
	Metal products, machinery and household appliances	3,301	2,903	2,925	3,055	3,123	3,232	3,163	3,004	3,065	3,234	3,380	11.6%	0.91%
	Electrical machinery and apparatus	1,063	945	982	958	952	1,006	959	995	962	863	802	2.8%	-4.05%
	Radio, TV, instruments, watches and clocks	240	233	235	258	264	265	282	266	286	281	257	%6.0	-0.61%
	Transport equipment	6,200	5,700	6,043	6,452	6,505	6,376	6,380	6,592	6,489	6,358	6,157	21.1%	-0.69%
	Furniture and other items NEC and recycling	1,984	1,819	1,862	1,873	1,934	1,932	1,926	1,839	1,812	1,904	2,024	6.9%	0.95%
Eastern Cape	Contribution by sector - Percentage	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
	Food, beverages and tobacco products	21.3	22.6	23.1	22.1	22.3	22.0	22.7	23.1	22.8	23.7	25.0		
	Textiles, clothing and leather goods	3.4	3.7	3.7	3.4	3.3	3.6	3.5	3.4	3.4	3.2	3.2		
	Wood and paper; publishing and printing	6.2	5.9	6.2	6.3	6.4	6.5	6.7	6.8	7.2	7.2	6.8		
	Fuel, petroleum, chemical and rubber products	18.1	18.7	18.1	18.6	18.6	18.6	18.3	17.9	18.3	17.6	16.9		
	Other non-metal mineral products	5.6	4.7	5.0	5.1	5.0	5.1	4.8	4.7	4.6	4.5	4.7		
	Metal products, machinery and household appliances	11.7	11.1	10.7	10.8	10.8	11.2	11.0	10.4	10.6	11.2	11.6		
	Electrical machinery and apparatus	3.8	3.6	3.6	3.4	3.3	3.5	3.3	3.5	3.3	3.0	2.8		
	Radio, TV, instruments, watches and clocks	0.9	0.9	0.9	0.9	0.9	0.9	1.0	0.9	1.0	1.0	0.9		
	Transport equipment	22.0	21.8	22.1	22.8	22.6	22.0	22.1	22.9	22.5	22.0	21.1		

Furniture and othe Source: Quantec Data, as at April 2019

13.4 REGIONAL EMPLOYMENT PER INDUSTRY – SA & EC

South Africa	-
by Industry - {	F
Employment	

Formal Employ Formal Employ	ment by Industry - South Africa ment (Number): Total												201	os Actual 3 - 2018
South Africa	Employment By Industry. In Job Numbers	2008 10 628 288	2009 10 268 543	2010 10 230 206	2011 10 511 000	2012 10 836 405	2013 11 042 740	2014 11 100 173	2015 11 550 020	2016 11 868 945	2017 12 001 254	2018 12 222 301	% %	6 ∆ p.a. 1 75%
	Agriculture forestry and fishing	818 612	714 661	665 278	644 122	696 227	739 961	701 491	879.596	873,880	842 556	845.373	6.9%	2 85%
	Mining and guartying	518.716	491.794	498,913	512.886	524.860	509,902	492.928	480.207	458.294	464.759	454.048	3.7%	-2.19%
	Manufacturing	1,297,028	1,211,371	1,177,382	1,167,656	1,166,544	1,167,982	1,160,552	1,173,928	1,188,383	1,200,296	1,214,139	9.9%	0.79%
	Electricity, gas and water	55,598	55,779	56,450	57,952	59,324	59,375	59,492	60,036	62,298	63,290	61,882	0.5%	0.84%
	Construction	480,005	442,364	436,447	476,648	511,108	528,133	552,211	568,697	615,150	631,474	634,149	5.2%	4.01%
	W holesale and retail trade, catering and accommodation	1,741,245	1,675,018	1,696,515	1,755,651	1,821,014	1,859,737	1,893,118	1,968,330	2,073,777	2,140,763	2,214,578	18.1%	3.82%
	Transport, storage and communication	369,321	363,579	380,690	405,246	439,366	456,983	460,891	467,669	468,210	474,967	482,656	3.9%	1.12%
	Finance, insurance, real estate and business services	1,918,704	1,829,585	1,827,896	1,913,849	1,974,034	2,022,468	2,052,927	2,120,900	2,198,321	2,248,657	2,322,188	19.0%	2.96%
	General government	1,704,273	1,767,968	1,820,610	1,911,834	1,943,401	1,919,941	2,010,664	1,969,149	2,003,271	1,933,820	1,954,244	16.0%	0.36%
	Community, social and personal services	1,724,786	1,716,424	1,670,025	1,665,255	1,700,527	1,778,228	1,805,899	1,880,508	1,927,361	2,000,672	2,040,134	16.7%	2.95%
South Africa	Contribution by sector - Percentage	2008	2009 3 0	2010 6 r	2011 î.1	2012	2013	2014 6.5	2015	2016	2017	2018 6.0		
	Agriculture, lorestry and fisming	1.7	0.7	0.0		4.0	1.0	0.0	0.7	4. 0	0.7	0.0 0		
	Mining and quarrying	P. 4	4. 0	4. U	4.4 V.	4.0	4.0	4.4	4.2	0.U	J.Y	3.1		
	Manufacturing	12.2	11.8	11.5	11.1	10.8	10.6	10.4	10.1	10.0	10.0	9.9		
	Electricity, gas and water	0.5	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
	Construction	4.5	4.3	4.3	4.5	4.7	4.8	4.9	4.9	5.2	5.3	5.2		
	W holesale and retail trade, catering and accommodation	16.4	16.3	16.6	16.7	16.8	16.8	16.9	17.0	17.5	17.8	18.1		
	Transport, storage and communication	3.5	3.5	3.7	3.9	4.1	4.1	4.1	4.0	3.9	4.0	3.9		
	Finance, insurance, real estate and business services	18.1	17.8	17.9	18.2	18.2	18.3	18.3	18.3	18.5	18.7	19.0		
	General governm ent	16.0	17.2	17.8	18.2	17.9	17.4	18.0	17.0	16.9	16.1	16.0		
	Community, social and personal services	16.2	16.7	16.3	15.8	15.7	16.1	16.1	16.3	16.2	16.7	16.7		
Source: Quantec	: Data, 2019												L	
	Formal Employment by Industry - Eastern Cape												٩	os Actual
	Formal Employment (Number): Total												20	13 - 2018
Eastern Cape	Employment By Industry. In Job Numbers	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	%	o∆ p.a.
	Total - Economic Sectors	795,855	770,999	765,077	783,660	805,287	821,367	835,443	863,114	886,566	891,731	907,012	100%	2.09%
	Agriculture, forestry and fishing	67,593	59,358	55,629	54,286	59,256	63,383	60,782	75,692	75,597	73,272	73,883	8.1%	3.31%
	Mining and quarrying	2,207	1,713	1,678	1,647	1,727	1,721	1,752	1,847	1,888	1,878	1,723	0.2%	0.02%
	Manutacturing	92,337	84,138	80,447	79,171	18,671	78,085	76,874	17,703	79,189	79,200	78,744	8.7%	0.17%
	Electricity, gas and water	2,848	2,8/0	2,888	2,964	3,021	3,010	3,029	3,078	3,196	3,23/	3, 191	0.4%	1.20%
	Construction	207'55 000 001	30,548	29,812	32,490	34,038	420,024	31,484	38,333	41,892	45,047	43,251	40.0%	4.29%
		026,021	140,021	000,021	123,302	040,40	040,040	040,040	000,041	112,401	103,044	104,940	0.7.0	0.000
	Finance incurance real estate and husiness services	105,1300	41, 100 99 821	98 991	103 003	105 425	107 233	20,032 108 466	111 605	114 935	117 423	121,430	3.0 % 13 4%	0.54 % 2 64%
	General novernment	187 354	193 769	198 913	208,283	211 098	207,841	216 936	211 863	215 045	207 056	208 785	23.0%	% D0 0
	Community. social and personal services	155.291	154.073	149.215	148,408	151.094	160.214	163.443	170.091	173.852	180.248	183,653	20.2%	2.93%
Eastern Cape	Contribution by sector - Percentage	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
	Agriculture, forestry and fishing	8.5	7.7	7.3	6.9	7.4	7.7	7.3	8.8	8.5	8.2	8.1		
	Mining and quarrying	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
	Manufacturing	11.6	10.9	10.5	10.1	9.8	9.5	9.2	0.0	8.9	8.9	8.7		
	Electricity, gas and water	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4		
	Construction	4.2	4.0	3.9	4.1	4.3	4.3	4.5	4.5	4.7	4.8	4.8		
	W holesale and retail trade, catering and accommodation	16.1	16.0	16.4	16.6	16.8	16.8	16.8	17.0	17.4	17.9	18.2		
	Transport, storage and communication	2.7	2.7	2.9	3.0	3.2	3.2	3.1	3.1	3.0	3.0	3.0		
		13.2	12.3	12.9	1.01	1.01	13.1	0.61	14.9	0.61	2.61	4.0-		
	Gommunity social and personal services	19.5	20.0	19.5	18.9	20.2 18.8	19.5	19.6	19.7	6.42 10.6	20.2	0.02		
Source: Quantec	Data. 2019	~~~		~~~~	2.2	222	222	~~~		22	1			

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Formal Manufa	cturing Employment (Number): Total												2	013 - 2018
South Africa		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 2	018	%	% ∆ p.a.
	Total - Manufacturing Sectors	1,297,028	1,211,371	1,177,382	1,167,656	1,166,544	1,167,982	1,160,552	1,173,928	1,188,383	1,200,296	1,214,139	100.0%	0.79%
	Food, beverages and tobacco products	218,588	213,785	210,342	203,694	202,137	206,383	213,055	226,589	241,811	244,055	246,866	20.3%	3.92%
	Textiles, clothing and leather goods	125,067	111,191	105,222	98,428	92,988	89,411	88,634	92,626	92,146	88,419	85,187	7.0%	-0.94%
	W ood and paper; publishing and printing	136,442	131,315	130,421	133,257	136,679	137,412	138,084	136,671	134,576	132,536	133,240	11.0%	-0.61%
	Fuel, petroleum, chemical and rubber products	159,833	150,553	148,349	152,320	157,411	161,673	157,986	157,198	156,480	163,931	173,424	14.3%	1.45%
	Other non-metal mineral products	77,239	64,479	58,187	55,746	54,839	54,737	55,432	56,733	56,106	58,380	60,713	5.0%	2.18%
	Metal products, machinery and household appliances	308,209	293,410	290,916	288,465	287,806	286,015	275,431	268,381	262,303	271,757	275,209	22.7%	-0.76%
	Electrical machinery and apparatus	40,568	37,354	37,701	42,476	42,317	42,908	43,193	43,695	44,214	37,523	39,895	3.3%	-1.40%
	Radio, TV, instruments, watches and clocks	16,624	16,782	16,940	16,890	17,040	17,359	17,736	17,430	18,552	19,349	19,545	1.6%	2.52%
	Transport equipment	120,523	108,419	104,230	104,391	105,786	105,635	104,107	106,229	112,443	113,279	108,836	9.0%	0.61%
	Furniture and other items NEC and recycling	93,935	84,083	75,074	71,989	69,541	66,449	66,894	68,376	69,752	71,067	71,224	5.9%	1.44%
South Africa	Contribution by sector - Percentage	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
	Food, beverages and tobacco products	16.9	17.6	17.9	17.4	17.3	17.7	18.4	19.3	20.3	20.3	20.3		
	Textiles, clothing and leather goods	9.6	9.2	8.9	8.4	8.0	7.7	7.6	7.9	7.8	7.4	7.0		
	W ood and paper; publishing and printing	10.5	10.8	11.1	11.4	11.7	11.8	11.9	11.6	11.3	11.0	11.0		
	Fuel, petroleum, chemical and rubber products	12.3	12.4	12.6	13.0	13.5	13.8	13.6	13.4	13.2	13.7	14.3		
	Other non-metal mineral products	6.0	5.3	4.9	4.8	4.7	4.7	4.8	4.8	4.7	4.9	5.0		
	Metal products, machinery and household appliances	23.8	24.2	24.7	24.7	24.7	24.5	23.7	22.9	22.1	22.6	22.7		
	Electrical machinery and apparatus	3.1	3.1	3.2	3.6	3.6	3.7	3.7	3.7	3.7	3.1	3.3		
	Radio, TV, instruments, watches and clocks	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.6		
	Transport equipment	9.3	9.0	8.9	8.9	9.1	9.0	9.0	9.0	9.5	9.4	9.0		
	Furniture and other items NEC and recycling	7.2	6.9	6.4	6.2	6.0	5.7	5.8	5.8	5.9	5.9	5.9		
Source: Quantec	c Data, 2019													
Formal Manufa	cturing Employment by Industry - Eastern Cape												ļ	
Formal Manufa	cturing Employment (Number): Total												2	013 - 2018
Eastern Cape		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 20	018	%	%∆p.a.
	Total - Manufacturing Sectors	92,337	84,138	80,447	79,171	78,671	78,085	76,874	77,703	79,189	79,200	78,744	100.0%	0.17%
	Food, beverages and tobacco products	15,040	14,636	14,343	13,852	13,696	13,920	14,284	15,129	16,177	16,381	16,552	21.0%	3.78%
	Textiles, clothing and leather goods	9,013	7,972	7,556	6,970	6,452	6,186	6,105	6,311	6,146	5,857	5,488	7.0%	-2.26%
	Wood and paper. nubliching and printing	6 730	6352	6 203	6 303	6 617	6 646	6 701	6 802	6 768	6 621	6 750	8 6%	031%

Formal Manufa	icturing Employment (Number): Total													013 - 2018
Eastern Cape		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 2	2018	%	%∆p.a.
	Total - Manufacturing Sectors	92,337	84,138	80,447	79,171	78,671	78,085	76,874	77,703	79,189	79,200	78,744	100.0%	0.17%
	Food, beverages and tobacco products	15,040	14,636	14,343	13,852	13,696	13,920	14,284	15,129	16,177	16,381	16,552	21.0%	3.78%
	Textiles, clothing and leather goods	9,013	7,972	7,556	6,970	6,452	6,186	6,105	6,311	6,146	5,857	5,488	7.0%	-2.26%
	W ood and paper; publishing and printing	6,739	6,352	6,293	6,393	6,617	6,646	6,791	6,802	6,768	6,621	6,750	8.6%	0.31%
	Fuel, petroleum, chemical and rubber products	9,820	9,056	8,521	8,732	8,893	8,873	8,551	8,545	8,552	9,003	9,417	12.0%	1.23%
	Other non-metal mineral products	4,950	4,151	3,693	3,505	3,422	3,397	3,406	3,460	3,409	3,529	3,640	4.6%	1.43%
	Metal products, machinery and household appliances	12,848	12,072	11,845	11,701	11,732	11,653	11,156	10,807	10,593	11,073	11,182	14.2%	-0.81%
	Electrical machinery and apparatus	4,088	3,572	3,554	3,692	3,606	3,550	3,341	3,233	3,217	2,498	2,657	3.4%	-5.03%
	Radio, TV, instruments, watches and clocks	761	752	752	733	731	727	727	701	734	762	761	1.0%	0.94%
	Transport equipment	23,981	21,051	19,894	19,826	19,949	19,753	19,126	19,298	20,115	19,970	18,851	23.9%	-0.91%
	Furniture and other items NEC and recycling	5,097	4,524	3,996	3,767	3,573	3,380	3,387	3,417	3,478	3,506	3,446	4.4%	0.39%
Eastern Cape	Contribution by sector - Percentage	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
	Food, beverages and tobacco products	16.3	17.4	17.8	17.5	17.4	17.8	18.6	19.5	20.4	20.7	21.0		
	Textiles, clothing and leather goods	9.8	9.5	9.4	8.8	8.2	7.9	7.9	8.1	7.8	7.4	7.0		
	W ood and paper; publishing and printing	7.3	7.5	7.8	8.1	8.4	8.5	8.8	8.8	8.5	8.4	8.6		
	Fuel, petroleum, chemical and rubber products	10.6	10.8	10.6	11.0	11.3	11.4	11.1	11.0	10.8	11.4	12.0		
	Other non-metal mineral products	5.4	4.9	4.6	4.4	4.3	4.4	4.4	4.5	4.3	4.5	4.6		
	Metal products, machinery and household appliances	13.9	14.3	14.7	14.8	14.9	14.9	14.5	13.9	13.4	14.0	14.2		
	Electrical machinery and apparatus	4.4	4.2	4.4	4.7	4.6	4.5	4.3	4.2	4.1	3.2	3.4		
	Radio, TV, instruments, watches and clocks	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0		
	Transport equipment	26.0	25.0	24.7	25.0	25.4	25.3	24.9	24.8	25.4	25.2	23.9		
	Furniture and other items NEC and recycling	5.5	5.4	5.0	4.8	4.5	4.3	4.4	4.4	4.4	4.4	4.4		

THE EASTERN CAPE OCEANS ECONOMY STRATEGIC ROADMAP





A STATUS QUO AND BASELINE ASSESSMENT











NELSON MANDELA UNIVERSITY