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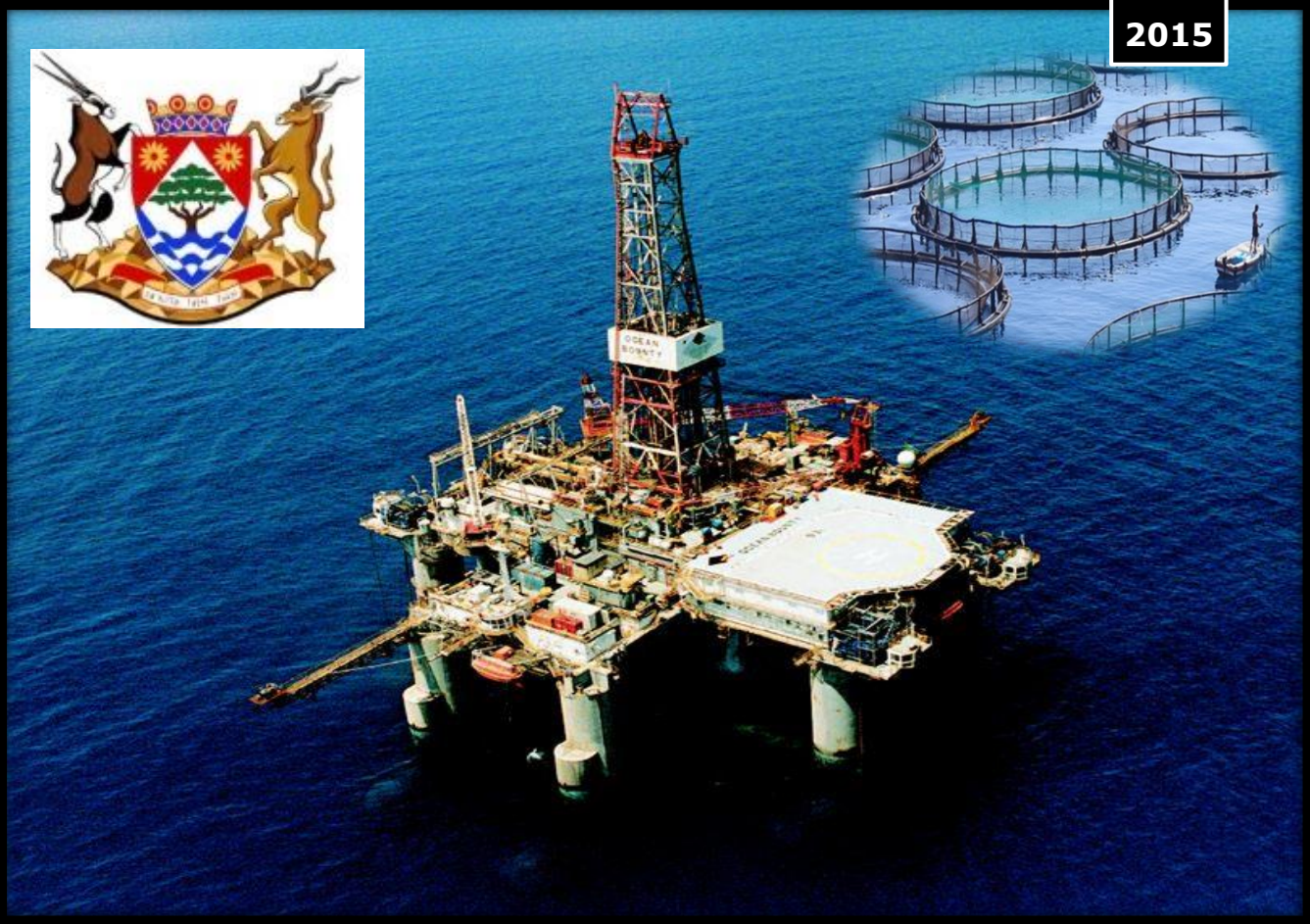

Ocean Economy:

Investigating opportunities for the Northern Cape

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List of Acronyms

CSIR	Council for Science and Industrial Research
DoE	Department of Energy
DoT	Department of Transport
DHET	Department of Higher Education and Training
EPWP	Expanded Public Works Programme
GDP	Gross Domestic Product
LTPF	Long-Term Planning Framework
NERSA	National Energy Regulator of South Africa
NDP	National Development Plan
NMMU	Nelson Mandela Metropolitan University
NC-DALRRRD	Northern Cape Department of Agriculture, Land Reform and Rural development
PETROSA	Petroleum Oil and Gas Corporation of South Africa
PASA	Petroleum Agency South Africa
SAMSA	South African Maritime Safety Authority
SAIMI	South African International Maritime Institute
SAPIA	South African Petroleum Industry Association
TBCSA	Tourism Business Council of South Africa
TVET	Technical and Vocational Education and Training

1. Introduction

South Africa's oceans have the potential to unlock the country's economic development. The country is bordered by the ocean on three sides thus long term developmental plans must include the coast and ocean resources and not land resources only. In 2010 the oceans economy contributed approximately R54 billion to South Africa's Gross Domestic Product (GDP) and accounted for approximately 316 000 jobs. The oceans economy has the potential to contribute up to R177 billion to GDP and between 800 000 and 1 million direct jobs[1]. To unlock the oceans economy four priority areas were identified. These are marine transport and manufacturing activities, such as coastal shipping, trans-shipment, boat building, repair and refurbishment; offshore oil and gas exploration; aquaculture and coastal tourism.

The coastal region in the Northern Cape Province extends over 3 municipalities, within the Namakwa District Municipality, namely Kamiesberg; Nama Khoi; and Richtersveld and stretches over 313 kilometres of coastline (Department of Tourism, Environment & Conservation and CSIR Environmentek, 2005). The two regional fishing nodes in the Northern Cape are at the towns of Port Nolloth and Hondeklipbaai. The province also has an abundance of diamond deposits both onshore and in marine deposits. This has led to the development of a large diamond mining sector, which has become the dominant activity of the Northern Cape's coastal zone. Diamond deposits are so extensive along the coast that mining companies hold the mineral rights and diamond concession areas covering most of the coast.

In the Northern Cape, Port Nolloth, Boegoebaai and Hondeklipbaai were identified as having huge potential for both harbour infrastructure, marine/aquaculture, small town precinct development, tourism and job creation through projects of Expanded Public Works Programme (EPWP) (Department of Public Works, 2015). In light of the three mentioned ports, the purpose of this report is to investigate opportunities that can be exploited in the oceans economy to contribute to provincial economic growth and creation of the much needed jobs. Whilst initially the report was to focus on investigating opportunities in the oil and gas industry only, the research team however decided to extend the scope to cover all the other potential growth areas identified in Operation Phakisa (oceans economy).

2. The concept of Ocean Economy

The oceans economy (also referred to as the blue economy) is a relatively new concept that has its origins in the green economy concept endorsed at the United Nations Conference on Sustainable Development, held in Rio de Janeiro in 2012 (United Nations Conference on Trade and Development (UNCTAD), 2015). At its core the oceans economy refers to the decoupling of socio-economic development from environmental degradation. In this regard, efficiency and optimisation of natural marine resources within ecological limits becomes paramount.

[1] sourced from operationphakisa.gov.za

The concept of oceans economy also embodies economic and trade activities that integrate the conservation and sustainable use of management of biodiversity, including maritime ecosystems and genetic resources (United Nations Conference on Trade and Development (UNCTAD), 2015).

3.Operation Phakisa

Operation Phakisa was introduced by the Presidency based on "Big Fast Results" methodology utilised by other governments including the Malaysian government. Operation Phakisa is a results-driven approach, involving setting clear plans and targets, on-going monitoring of progress and making these results public. Operation Phakisa is initially implemented in two sectors, the ocean economy and health. It also aims to accelerate the execution of the National Development Plan (NDP).

The methodology consist of eight sequential steps. It focuses on bringing key stakeholders from the public and private sectors, academia as well as civil society organisations to collaborate in[2]:

- detailed problem analysis;
- priority setting;
- intervention planning and;
- Delivery.

Focus areas of Operation Phakisa on oceans economy include; oil and gas exploration, marine transport and manufacturing, aquaculture and maritime protection and governance.

4.Opportunities in ocean economy (NC)

The aim of this sub-section is to briefly discuss possible opportunities that may be exploited by the Northern Cape government and relevant stakeholders in the oceans economy. We probe each growth area as identified by Operation Phakisa (oceans economy) and investigate how the province can benefit.

4.1 Marine transport and manufacturing activities

The maritime shipping industry is an essential coordinating and cohesive element of many other industries. It is an integral component of physical trade and economic exchange, enabling businesses to thrive in the globally interdependent economy. By tonnage, 80% of the world's cargo is plied by sea-going vessels, with land-based models and airlines transporting the remaining 20% (Transnet, 2015).

The following tabulated are nine South African ports which fall under custodianship of Transnet, as per Port regulations of 2005:

Port Nolloth	Port Elizabeth	Mossel Bay
Saldanha Bay	Port Nqgura	Durban
Cape Town	East London	Port of Richards's Bay

[2] see more information on www.operationphakisa.gov.za

Of the nine ports, eight are commercial, handling mainly freight with 30-year cargo demand forecasts. Port Nolloth is the only exception, it is neither a commercial port nor does it have a forecasted cargo demand, due to limitations of waterside infrastructure. It's narrow and shallow, making entrance to the harbour difficult and it has become significantly silted-up over the years. As a result the port has deteriorated to provide facilities for only small fishing and recreational vessels, as well as minor support services to the offshore mining operations (Transnet, 2015).

The Port is leased to De Beers Group Services (Pty) Ltd for a period of ten years which begun on 01 August 2006. De Beers uses the port as an offshore supply base for conducting diamond prospecting activity in Namibia. Smit Amandla Supply vessels are stationed in Port Nolloth and used for transferring frozen and dry foods, medicine, clothing, oil and lubricants, fuel, steel, gas and fresh water to De Beers' offshore prospecting vessels. No general cargo or fish is landed at the port. This is why the long-term planning framework (LTPF) development plans focus mainly on the remaining eight commercial ports excluding Port Nolloth.

Transnet has however identified Boegoebaai in the Northern Cape as a potential site for development. This site is located approximately 60 km north of Port Nolloth and 20km south of the South African and Namibian border. A feature of this site, is the distance from the coastline to deep water which is relatively short. This feature would be beneficial in reducing the size and length of required breakwater and jetty structures while also minimising the amount of capital dredging required (Transnet, 2015). Boegoebaai offers a sheltered area which is protected from south-westerly waves by a headland and the site is currently sparsely populated. The location of Boegoebaai places it relatively close to rich mining and agriculture sectors compared with existing ports in the region.

4.1.1 Ship repair, building and related activities

The ship repair industry creates substantial employment and is labour intensive once the infrastructure needed for dry docking is in place. Employment in the industry involves a variety of vocations spread throughout firms concerned with marine, mechanical and electrical engineering, ship design and architecture, electronics, hydraulics, refrigeration, air-conditioning, welding, cleaning, painting, firefighting and many other tasks (National Department of Transport, 2011). Supplies required by the industry include steel, fastenings, paint, equipment of many kinds and various type of materials. The type of employment and variety of supplies needed results in the diffusion of the economic benefits throughout the local economy and creates opportunities for participation among small and medium, as well as large enterprises.

Ship repair is mainly an onshore industries activity, although some work is undertaken at sea. In South African ports, many of the ships repaired comprise of local and foreign fishing trawlers, research and patrol vessels, as well as rigs and craft employed in offshore oil and gas exploration, apart from commercial

ships (mainly in Durban).The current business of ship repair is thus largely dependent on fishing and non-trading vessels, while damage to cargo ships caused by the severe weather and sea currents off the south-east coast is an opportunistic source of lucrative income from repair work (National Department of Transport, 2011). Ship building in South Africa has declined to a minor industrial sector with the occasional construction of harbour craft and trawlers being undertaken in the ship yards at Durban.

The SA shipbuilding industry faces stiff competition from shipbuilding companies in the Far East or Eastern Europe or with shipbuilding by subsidized shipyards elsewhere. This is because the costs of local materials and labour are in excess of similar inputs in the Far East countries in which competing shipyards are located (National Department of Transport, 2011). These countries are also the cheapest source of the machinery and equipment needed. In order for South African shipyards to re-enter the international shipping industry, substantial subsidies are needed to support the local industry. However, there are still active shipyards in South Africa, apart from yachts for foreign buyers, only trawlers, harbour craft and non-commercial vessels for local customers have been built in recent years.

At the time of writing this report, a South African shipbuilding company was awarded a tender worth R 1.4 billion to build two vessels. Smit Amandla Marine partnered with Damen Shipyards in Cape Town to build these vessels; and these could possibly carry out supply and support work for the De Beers group's offshore diamond mining activities in Port Nolloth. Smit Amandla Marine decided to build these vessels as part of their obligations in the National Industrial Participation Programme; which is an offset programme aimed at building local industrial capabilities. One of the boats was named Aukwatona- the historical name for Port Nolloth (Cape Business Times, 2015). The Minister of Trade and Industry, Rob Davies said that the tender will assist to create sustainable jobs in the ocean economy and local shipbuilding industry.

4.2 Offshore oil and gas exploration

South Africa has small deposits of conventional oil and natural gas. According to the Department of Energy (DoE), close to 70% of the country's liquid fuels demand is met by imports of crude oil and finished products, while the balance is satisfied by local production of synfuels from coal and gas. This dependence on imported fuel products exposes South Africa to various economic and political risks.

Operators are currently looking at South Africa's western coast for oil and gas exploration. The port of Saldanha Bay in the Western Cape is South Africa's largest "natural" harbour, about 105km north-west of Cape Town. It has been targeted as an ideal location to develop an oil and gas and marine repair hub, providing services, maintenance, fabrication and supplies (Nina Rach, 2014). The area is strategically located between oil and gas developments on the west coast of Africa.

Moreover, the Orange Basin (west coast) is volumetrically the largest of South Africa's offshore basin, it is underexplored with one well per 4000km .Several petroleum systems (oil and gas) are known to be operating in the basin, and two fields with multi-trillion cubic feet potential natural gas reserves have been discovered to-date, i.e. the Ibhubesi and the Kudu gas fields.

Map 1: SA oil and gas basin

Source: Petroleum Agency SA

4.2.1 Shell Upstream South Africa Exploration rights

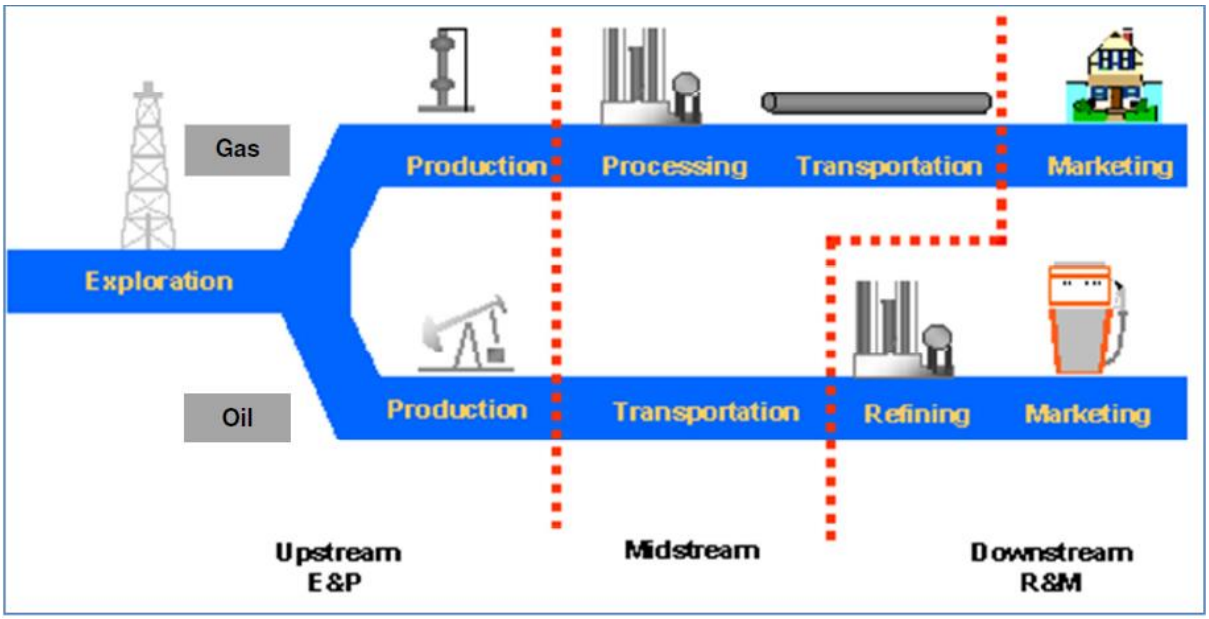
Shell Upstream South Africa, a subsidiary of Royal Dutch Shell plc (Shell) was the successful bidder for exploration rights for exploration rights in the recent exploration South Africa bid round. Shell Upstream South Africa won the bid for exploration at the Orange Basin Deep Water Licence Area; which is situated offshore of the west coast of South Africa.

The block's southern edge is approximately in line with the town of Saldanha Bay (Western Cape and the northern edge just south of Kleinzee (Northern Cape). It borders with Namibian-waters at it Northern extent, at its closest point the block is located approximately 150 km offshore and at its furthest approximately 350 km offshore (Shell Upstream South Africa B.V, 2010).The nearest coastal settlements to the licence block include Langebaan, Saldanha, Elands Bay, Kleinzee and Port Nolloth.

4.2.2 Oil and gas industry value chain

This subsection aims to briefly discuss the oil and gas value chain and highlight important activities and stakeholders. The structure of the oil and gas industry is divided into three main categories (South African Maritime Safety Authourity (SAMSA), 2013). The upstream, midstream and downstream, as illustrated in diagram 1 below. The top half of the value chain represents the gas while the lower base represents oil.

Diagram 4.1: Oil and Gas value chain



Source: (South African Maritime Safety Authourity (SAMSA), 2013)

The upstream segment is largely dominated by the exploration and production phase. Midstream is where the processing takes place and semi processed commodities are then transported to the refineries. Lastly, Downstream segment, which also encompasses the marketing and distribution activities.

Upstream

Currently, there are 14 offshore operators spread across over 16 concessions and seven applications for offshore gas exploration rights. This segment is largely dominated by the Petroleum Oil and Gas Corporation of South Africa (PTY) limited (PetroSA); a government-owned company. Other companies within this segment include multinationals such as Forest Oil, BHP Billiton and Shell International.

Midstream

The midstream segment of the industry involves the processing and the transportation of natural gas and oil. The transportation of natural gas is done by the use of natural gas pipelines. Much of the processing of gas in South Africa is done by the major stakeholders who include PetroSA along with their joint partners.

Downstream

PetroSA, the Central Energy Fund, the National Energy Regulator of South Africa (NERSA) and Petroleum Agency South Africa (PASA), as well as the members of the South African Petroleum Industry Association (SAPIA), are the major role players in the country's liquid fuels market and in particular the downstream refinery segment of the industry. SAPIA has seven members that represent all the major oil companies doing business in South Africa.

Supporting industries

There are over 200 companies registered under the South African Oil and Gas Alliance, which provides supporting services to the offshore oil and gas industry.

Table 4.1: Main companies in the supporting industries (oil and gas)

1. Algoa Oil & Pipeline Services (PTY)	6. Hydron Hydraulics
2. DCD-DORBYL Marine	7. Ropetec
3. Dormac Offshore	8. SGB-Cape
4. Electro Wave	9. Toprope
5. Global Spec	

Source: (South African Maritime Safety Authourity (SAMSA), 2013)

Some of the key products and services the supporting industry offer include the following:

a. *Fabrication and construction*

This pertains to design, fabrication or construction of specialised modules or facilities for the oilfields. These may include storage tanks, processing modules for offshore platform facilities, docking facilities, tugs/barges, civil structures and platforms.

There is a large fabrication yard at Saldanha Bay dedicated to regional upstream market. The facility has 5 000 tonnes per annum of fabrication capacity and focuses on the fabrication and construction of jackets, process and services topside modules, decks, boom bridges and sub-sea infrastructure (South African Maritime Safety Authourity (SAMSA), 2013).

b. *Repairs and maintenance*

The Port of Cape Town is the main centre for the repair and upgrade of upstream offshore vessels, and equipment due to its strategic location on the southwestern corner of the African continent and depth of services available (South African Maritime Safety Authourity (SAMSA), 2013).The Port has a large graving dry-dock (Sturrock dry-dock) a repair quay and a dedicated berth (A-Berth) for repairs and fabrication.

The Port of Cape Town's dry-dock facility is capable of handling drillings rigs or new generation drill ships. The Port of Saldanha also offers potential opportunities to locate rig and ship repairs (South African Maritime Safety Authourity (SAMSA), 2013). Moreover, the Port of Durban has a long established ship repair and offshore fabrication capability.

c. Equipment and materials suppliers

Suppliers provide a wide range of pumps, valves, motors, instrumentation, process equipment etc. for the required needs of the industry.

d. General and Technical Support Services

This includes general services such as legal and finance. More technical services include a significant cluster of companies doing inspection and maintenance, diving services, ROV (remotely operated under-sea vehicles) operations and repairs etc.

4.3 Aquaculture

Aquaculture in South Africa can be divided into freshwater and marine aquaculture. According to the National Aquaculture Framework (2013), aquaculture means the farming of aquatic (marine or freshwater) organism including fish, mollusks, crustaceans and plants in controlled or selected aquatic environments, with some form of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators etc. Farming also implies individual or corporate ownership of the stock being cultivated. This definition includes ranching and stock environment as aquaculture activities.

Global consumption of fish and fish related products has increased greatly, mainly for health reasons, and has become a food of choice, especially in rich developed countries. Of the 141 million tonnes fish consumed globally, over 70 million tonnes comes from aquaculture (Fishstatj, 2014). In South Africa, aquaculture production has increased from 4 000 tons in 2013 to 20 000 tonnes in 2014. In 2015, the revenue contribution by aquaculture to the South African economy was estimated at R 3 billion and created 15 000 direct and full time jobs (Department of Agriculture, Forestry and Fisheries, 2015).

Climatically, the Northern Cape coastline is suitable for farming a variety of marine fish species. It provides the coolest water along the South African coast, an important pre-requisite for fish farming (Feike, TIPS, 2008). The kelp or seaweed beds along parts of the coastline afford a natural product for harvesting, not least as feed for abalone farming. Successful aquaculture experiments at Kleinzee (in abalone and Oysters), at Port Nolloth (in abalone) and Hondeklipbaai (also in abalone), justify expansion of these species and experimentation with fin-fish farming (Feike, TIPS, 2008).

The Northern Cape coast is also suitable for cultivation of high-value marine food such as salmon, trout, kabeljou, turbot and other indigenous line fish species (Engineering News, 2000). There is a potential for farming seaweed on the Northern Cape coast, especially if agar (a gelatinous substance made from seaweed, widely used in the East in food and bacterial cultures) is extracted locally. In addition, opportunity exist of introducing high-value species of brine shrimp in the Northern Cape. There is also a gap in the market for frozen brine

shrimp biomass, which is used as feed for aquarium fish (Engineering News, 2000).

4.3.1 Vanderkloof Dam

The Vanderkloof Dam is the second largest (133km²/ 13 300 ha) and longest (114 km) water body in South Africa and was built as part of the Orange River Scheme. The main aim of the scheme is to provide a solution to chronic water shortages and to generate hydro-electricity. The dam is primarily used for irrigation but also supplies the urban requirements of Koffiefontein, Ritchie, Jacobsdaal, Petrusville, Keurtjieskloof and Vanderkloof. The Dam is also used by the informal Vanderkloof Angling Club, Vanderkloof Boat Club, local recreational fishing and Kayak tourism establishment, other water sport enthusiasts and a number of subsistence fisheries.

Most of the recreational use of the dam is relatively informal. In addition, recreational angling is popular at the dam. This includes bank angling and light boat angling for species such as common carp (*cyprinus carpio*), sharptooth catfish (*clarias gariepinus*), Mudfish (*labeo capensis*), Smallmouth yellowfish (labeobarbus aeneus), Moggel (*labeo umbratus*) and Largemouth yellowfish (labeobarbus kimberleyensis) (Rhodes University, Northern Cape Department of Agriculture, Land Reform and Rural Development, 2015).The dam is primarily used during the December and April holidays, where a number of recreational users travel from around the country. To a lesser extent some recreational users also travel to the dam on weekends.

The Northern Cape Department of Agriculture, Land Reform and Rural Development (NC-DALRRRD) has recognised the potential inland fisheries may have for local rural communities in the area. NC-DALRRRD explored the possibility of developing small-scale fishery on the Vanderkloof Dam through appointing Rhodes University to undertake a feasibility study to ascertain this potential. This would allow the department to make an informed decision on development of a small-scale experimental fishery. Biological, economic and social data created in the experiment will be used to assess its biological and economic feasibility and to make a decision on whether to implement the next phase (small-scale commercial fishery). The experimental fishery will run for a minimum of 2 years. Over and above the fishery, other economic opportunities must be identified and explored in order to benefit the communities of surrounding areas.

4.4 Marine and Coastal Tourism

South Africa's coastline stretches for nearly 3000 km. These shores are home to an astonishingly diverse variety of natural habitats, flora and fauna, histories, cultures and traditions. Marine tourism and leisure present a great opportunity for future development and economic acceleration (Tourism Business Council of South Africa, 2014). The marine tourism industry in South Africa comprises of:

a) The boating and cruising cluster that includes yachting, cruising, ferrying, as well as hospitality and entertainment
b) The sports and recreational cluster that includes marine activities, diving, swimming and sailing

c) The leisure cluster which includes eco-marine tourism, real estate, as well as adventure and viewing (such as whale watching and shark cage diving)

Marine and coastal tourism has tended to benefit areas with well-developed infrastructure e.g. Durban and Cape Town. Some areas that have potential tourism value have not benefited due to lack of basic and tourism infrastructure. Consequently such areas are not able to attract tourists and necessary investments.

Operational Phakisa (coastal tourism lab) has prioritised the following sub-sectors:

- Boat and river cruises
- Adventures
- Products for beach tourism
- Development of tourism coastal nodes
- Ports and harbour tourism
- Beachfront infrastructure
- Water based activities
- Community based tourism
- Youth Programmes- paddling, diving etc.
- Filming industry

Furthermore, according to Tourism Business Council of South Africa (TBCSA), inland regions suffer from considerable ignorance and neglect, but have a high potential in marine-based tourism. The inland dams and major rivers provide ecosystem services of considerable economic benefit to the communities.

5.Capacity development and skills required

The drive for South Africa to maximise its participation in the global "blue economy" was strengthened with the launch of South African International Maritime Institute (SAIMI) in Nelson Mandela Bay. SAIMI is responsible for facilitating the development of skills and knowledge base required to ensure the success of "blue economy" maritime economic development initiatives such as Operation Phakisa and the African Union's integrated maritime strategy (SAIMI, 2015). SAIMI serves South Africa and the African continent in providing skills development, education, training and research that supports growth of the ocean economy. SAIMI is an initiative of SAMSA in partnership with the Nelson Mandela Metropolitan University (NMMU) and Department of Higher Education and Training (DHET).

SAMSA appointed Deloitte to conduct the Maritime Industry skills study that will provide an evidence base for planning skills development (SAMSA, Department of Transport, 2011). Table 4.2, shows various skills and occupations that were identified as being critical to the success of maritime economy.

Table 4.2: Critical skills in Maritime Industry

Sub-sector	Critical skills
1. Shipping, Ports and Logistics	Navigation officers, Engineers, Engine

	and Deck Ratings, Hydrographers, Oceanographer, Maritime Technologists, Marine Ecologists, Meteorologists, Fire- Fighters, Transport and Logistics management, Maritime Project Management, Vessel traffic management, sea-watch and rescue operators
2. Offshore Oil and Gas	Geologists/ Geophysicists, Engineers (chemical, geotechnical, drilling, structural, marine, mechanical), Deck officers, Artisans
3. Fisheries and Aquaculture	Aquatic health or Aquaculturalist, Deck officers, Marine Engineers, Artisans, Ratings
4. Vessel Construction & Repairs	Naval Architects, production managers, designers, electricians, electronics, metal fabrications, boiler makers and welders, riggers, technicians
5. Commercial Services	Marine attorneys/ lawyers, marine and environmental lawyers, maritime economists, maritime financiers/underwriters, maritime consultants, crewing, training, research and innovation
6. Maritime Tourism	Hospitality officers (chefs, stewards etc.), marine conservation officers, dive videographers/photographers
7. Safety, security, Defence	Security, defence personnel, inspectors, lawyers, quality professionals

Source: (SAMSA, Department of Transport, 2011)

According to SAMSA, South Africa has a shortfall of about 50 000 artisans and industry often has to import migrant workers at an exorbitant costs. The research team sees this as a huge potential for the Northern Cape to introduce and partner with other stakeholders to introduce a programme to skill unemployed youth to be artisans.

6.Synthesis and Conclusion

The oceans have the potential to unlock the country's economic development opportunities. Operation Phakisa (ocean economy) was implemented by the Presidency. It is based on "big fast results" methodology utilised by other governments including Malaysian government. Stakeholders from the private and public sector gather to develop and plan" fast track" integrated programmes designed to unlock growth and delivery in the oceans or "blue economy".

The coastal region in the Northern Cape Province extends over 3 municipalities, within the Namakwa District Municipality, namely Kamiesberg; Nama Khoi and Richtersveld. Port Nolloth and Hondeklipbaai are the regional fishing nodes in the

province. Furthermore, there are extensive diamond deposits along the coast and mining companies hold mineral rights and diamond concessions areas covering most of the coast. In addition, Port Nolloth, Boegoebaai and Hondeklipbaai were identified as having a huge potential for both harbour infrastructure, marine/aquaculture, small town precinct development, tourism and jobs creation projects. That being said, the provincial government, local government and private sector must focus on investing in infrastructure and developing the aforementioned areas, and ensure adequate provision of public services. Government (provincial and local) must ensure that they create a conducive environment for private sector to invest and operate in coastal areas with huge economic potential.

In terms of maritime shipping industry, Port Nolloth does not have a forecasted cargo demand due to limitations of waterside infrastructure. Its narrow, shallow entrance makes it difficult for commercial ships to use the harbour. The port has deteriorated to provide facilities for only small fishing and recreational vessels, as well as minor support services to the offshore mining operations. The Port is leased to De Beers Group Services (PTY) Ltd, for a period of ten years which begun on 01 August 2006. As a result of the above mentioned challenges, Transnet's long term planning framing for port development focusses on other commercial ports excluding Port Nolloth. However, Transnet has identified Boegoebaai as a potential site for harbour development particularly in maritime transporting. This is firstly because of the feature of the site and secondly that it is placed relatively close to rich mining and agricultural sectors as compared to the other two ports in the province.

Ship building in South Africa has a declined to a minor industrial sector with the occasional construction of harbour craft and trawlers being undertaken in the ship yards at Durban. This is despite the ability of the ship repair industry to create substantial employment once the infrastructure needed for dry locking is in place. Supplies required by the industry include steel, fastenings, paint and various equipment and materials. The type of employment and variety of supplies needed results in the diffusion of the economic benefits throughout the local economy and creates opportunities for participation among small, medium and as well as large enterprises.

The challenge is that the overall SA ship building industry faces stiff competition from ship building companies in the Far East and Eastern Europe; which are heavily subsidized. These countries are also the cheapest source of the machinery and equipment needed. In order for South African shipyards to re-enter the international shipping industry, substantial subsidies are needed to support the local industry. This, together with the current manufacturing capacity, in essence clearly points out that the Northern Cape Province has no prospects in ship building. However, the recent developments regarding Smit Amandla Marine present an opportunity of a possible partnership with De Beers' group, wherein the former can carry out supply and support work for the latter.

According to the Department of Energy, close to 70% of the country's liquid fuels demand is met by imports of crude oil and finished products, while the balance is satisfied by local production of synfuels from coal and gas. Operators

are now looking at South Africa's western coast for oil and gas exploration. The port of Saldanha bay in the Western Cape has been targeted as an ideal location to develop an oil and gas and marine repair hub; providing services, maintenance, fabrication and supplies. Port Nolloth is one of the nearest coastal settlements to the licence block, presenting the province with an opportunity to investigate how this closeness can be optimised.

Shell Upstream South Africa, was the successful bidder for exploration rights in the recent exploration bid round. Shell won the bid for exploration at the Orange Basin Deep Water Licence Area; which is situated offshore of the west coast of South Africa. The block Southern edge is approximately in line with the town of Saldanha Bay, Western Cape and the Northern edge just south of Kleinzee (Northern Cape). By and large, in terms of oil and gas industry, Saldanha Bay is expected to benefit more than coastal towns in the Northern Cape and is also targeted to be the oil and gas hub.

In South Africa, aquaculture production has increased from 4 000 tons in 2013 to 20 000 tonnes in 2014. In 2015, the revenue contribution by aquaculture to the South Africa economy is estimated at R3 billion and 15 000 direct and full time jobs. Northern Cape must capitalise on coastal areas to benefit from the boom in aquaculture industry. Climatically, the Northern Cape coastline is suitable for farming a variety of marine fish species. Successful aquaculture experiments at Kleinzee (in abalone and Oysters), at Port Nolloth (in abalone) and Hondeklipbaai (also in abalone), justify expansion of these species and experimentation with fin-fish farming.

Furthermore, the Northern Cape Department of Agriculture, Land Reform and Rural Development (NC-DALRRRD) recognised the potential inland fisheries may have for local rural communities near Vanderkloof Dam. It subsequently appointed Rhodes University to conduct a feasibility study to explore possibilities to develop a potential small-scale commercial capture fisheries on the Dam. The study findings were positive leading to the experimental fisheries which will run for a minimum of 2 years. In addition, other economic opportunities that can benefit the local communities have been identified and are currently being researched.

The National Tourism Strategy and other related documents are silent on the topic of marine and coastal tourism. At the time of writing the report the National Department of Tourism was busy with consultations with coastal provinces with the aim of developing a Marine and coastal strategy. Marine tourism and leisure present a great opportunity for future development and economic acceleration in the country, including the Northern Cape. However, the marine and coastal tourism has tended to benefit areas with well-developed infrastructure e.g. Durban and Cape Town. Some areas including coastal towns in the province that have tourism value have not benefited due to lack of basic and tourism infrastructure. In essence, the Province Government and relevant stakeholders need to invest in infrastructure in order to attract potential investors and boost tourism.

The Maritime Industry Skills Study conducted by SAMSA in partnership with Deloitte highlighted various critical skills required to grow the ocean economy. Some of the skill required include engineers, marine ecologists, rescue operators, Deck ratings, geologists, artisans, aquaculturalists, naval architects, boiler makers, welders, riggers, marine attorneys, hospitality officers, marine conservation offices, inspectors etc. In light of all these skills required, SAIMI was established to provide skills development, education, training and research that supports growth of the ocean economy. In addition, various national departments (i.e. DHET) together with partners (i.e. TVET colleges) introduced the artisan development programme to train unemployed youth to be qualified artisans. That being said, the provincial government must follow the same route and intensify the training of unemployed youth in the province to become artisans and other related.

7. Recommendations

The importance of oceans economy as an avenue for economic development is crucial. The following are recommendations for the Northern Cape provincial government and relevant stakeholders:

- Developing a Marine and Coastal Development strategy for the Northern Cape; which will serve as a blueprint for strengthening and developing oceans economy in the province. this strategy should address the following crucial areas;
    i. Necessary Municipal infrastructure support conducive for port and harbour development in coastal areas
    ii. Skills needs of this sector;
- Officials from various departments (i.e. Agriculture, Economic Development & Tourism, Transport and Environmental affairs) in the Northern Cape must intensify participation and debates in the oceans economy (Operation Phakisa) labs;
- Draw lessons from neighbouring ports like Saldanha Bay and Port of the Cape Town to learn more about their operations in the oceans economy and port development, with a view of identifying opportunities that can be replicated in the Northern Cape;
- Intensify skills development for oceans economy.

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