

Ugu Lwethu - Our Coast

A profile of coastal KwaZulu-Natal

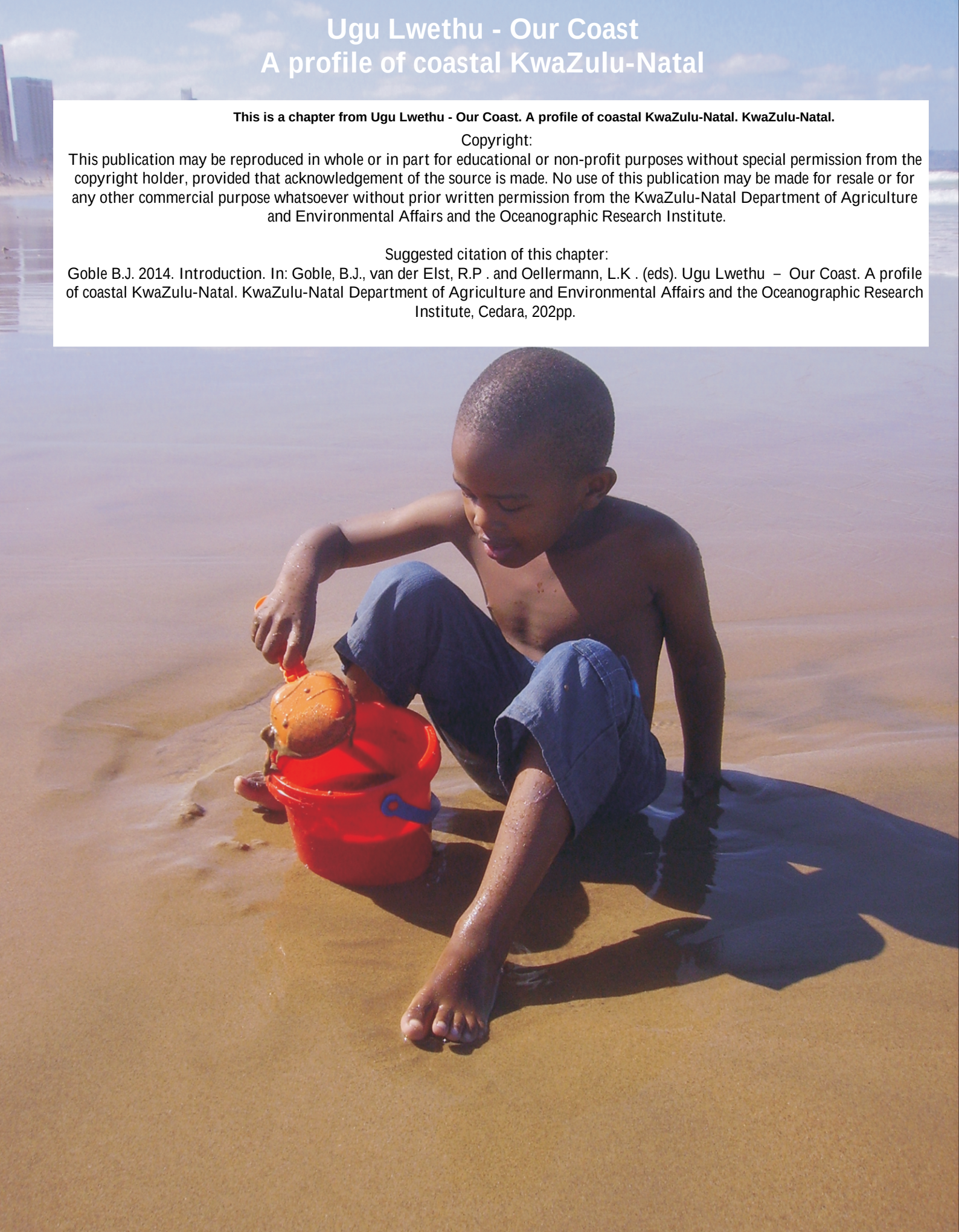
This is a chapter from Ugu Lwethu - Our Coast. A profile of coastal KwaZulu-Natal. KwaZulu-Natal.

Copyright:

This publication may be reproduced in whole or in part for educational or non-profit purposes without special permission from the copyright holder, provided that acknowledgement of the source is made. No use of this publication may be made for resale or for any other commercial purpose whatsoever without prior written permission from the KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute.

Suggested citation of this chapter:

Goble B.J. 2014. Introduction. In: Goble, B.J., van der Elst, R.P. and Oellermann, L.K. (eds). Ugu Lwethu – Our Coast. A profile of coastal KwaZulu-Natal. KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute, Cedara, 202pp.



1 Introduction

1 Introduction

The KwaZulu-Natal (KZN) coast is shaped by a unique assemblage of physical features comprising climatic, geological and oceanographic characteristics. Collectively they create a distinctive coastal environment rich in social, economic and ecological resources.

 1.1 Overview

 1.2 The Coastal Zone

 1.3 The Coastal Economy

1.1 Overview

The coast is a cherished environment for human settlement, but it is also an environment in which ecological diversity, human activity and socio-economic influences are interdependent and interact.¹

The average population density of coastal areas is about 80 persons per square kilometre (*Section 6.1*), which is twice the world's average population density.² It is predicted that the numbers will continue to grow substantially, being driven by natural population growth coupled with migration to the coast, tourism, recreation, residential and industrial development. A growing population puts the coastal environment under pressure from urban encroachment, pollution, water extraction and over-exploitation of resources.

This raises concerns about sustainability, exacerbated by the potential effects of climate change, with coastal environments highlighted as an “area of particular concern” by the Intergovernmental Panel on Climate Change (IPCC).³ It is anticipated that coastal environments will be exposed to increased erosion, sea-level rise (*Section 9.5*), intensification of tropical and extra-tropical cyclones, and increased flooding and wash-over events.^{3; 4}

The KwaZulu-Natal (KZN) coast is no exception to these trends. It is a special and appealing place to live, and to visit as a tourist, offering attractive beaches and a variety of recreational activities, fishing, diving, a year-round warm climate with comfortable seawater temperatures, and

Leven Point, KZN north coast.



Photo: Stuart Dunlop



accessibility from other parts of South Africa. However, the pressures on, and threats to, the ecological functioning and resources of the KZN coast resulting from coastal development, requires careful management.

The need for wise planning and the effective management of the coast has long been recognized, with policy makers worldwide defining policies and legislation to address the problems in the coastal zone.⁵ Integrated Coastal Management (ICM) is now a globally recognised and widely used approach to the management of the coast and its resources. South Africa, having followed global trends for coastal management, recognised the need for dedicated legislation in order to protect this environmental, social and economic asset. The *Integrated Coastal Management Act (Act No. 24 of 2008)* (ICM Act) was promulgated at the end of 2009, but coastal authorities are now faced with the implementation of this legislation (*Section 10.2*), and the management of a highly complex environment that is subject to natural and anthropogenic pressure. However, in order for ICM initiatives to be effective, both the people who manage the coast and those who use it need a better understanding of the value and management intricacies of coastal resources.

About this publication

Our KZN coast is a unique environment that embraces a range of ecosystems and species. It is also a zone of varied and intense human activity that requires planning and management in order to ensure sustainability for future generations. The aim of this book is to bring these disparate worlds together, by providing a broad but factual overview of the natural features and resources of the KZN coast, and the many ways in which they are being utilised. It highlights the value of the KZN coast for all users, and emphasises wise approaches to be adopted that will protect this much-cherished coast and its resources for current and future generations.

This book is partitioned into a number of chapters and sections, to help the reader focus on specific components. Chapter 1 provides a general introduction and overview of the coastal zone. Chapter 2 deals with the physical coastal environment, its climate, geology and oceanography. Chapter 3 outlines the coastal and marine ecosystems found in the KZN coastal zone, their uniqueness and importance. The next chapter (Chapter 4) provides an overview of the coastal and marine diversity found along the KZN coast, their habitats and distribution, while Chapter 5 focuses on migratory species. Chapter 6 looks at the human dimension within the coastal zone, its population and associated infrastructure. Chapters 7 and 8 highlight the socio-economic and commercial utilisation of coastal resources, respectively. Chapter 9 is an overview of the current pressures on, and threats to the coastal environment. Lastly, Chapter 10 deals with various national and international mechanisms that have been developed to manage this unique resource.

Copyright:

This publication may be reproduced in whole or in part for educational or non-profit purposes without special permission from the copyright holder, provided that acknowledgement of the source is made. No use of this publication may be made for resale or for any other commercial purpose whatsoever without prior written permission from the KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute.



Photo: Bronwyn Goble

1.2 The Coastal Zone

The coastal zone is a complex system that incorporates a number of components and factors that give it shape and definition.¹ In broad terms, it is defined as the portion of the terrestrial environment influenced by being near to the sea and the portion of the marine environment influenced by being near to the land.²

The question that this definition raises is just how far inland the marine environment influences terrestrial ecological functioning; and conversely how far into the ocean the terrestrial environment influences marine ecological functioning.³ As a result, the coastal zone lacks a universally accepted physical definition and varies between countries in terms of both landward and seaward extent.

The coastal environment includes a broad array of terrestrial and marine habitats varying from rivers, coastal forests, wetlands, cities and farms to coral reefs, sediment or rocky substrates. The open waters of estuaries and coastal marine environments are also considered to be part of the coastal zone.^{4,5} The coastal zone provides a range of economic and social services such as fisheries, coastal protection, waste assimilation and a location for access through ports and harbours. It is also popular for residential, tourist and recreational activities.

South African Coastal Zone

In South Africa, the coastal zone is now defined under the *ICM Act*. The Act identifies a number of components that make up this zone, namely:

- Coastal public property (CPP)
- Coastal protection zone (CPZ)
- Coastal access land
- Coastal waters
- Coastal protected areas
- Special management areas
- Coastal set-back lines

Jolly Rubino, which ran aground near St Lucia in 2002.



Coastal public property (CPP)

Coastal public property includes coastal waters, land submerged by coastal waters, islands (natural and artificial) within coastal waters, the sea-shore (excluding areas lawfully alienated prior to the *Sea-Shore Act*, state owned admiralty reserve, and state land declared as CPP. It also includes any natural resources located on CPP or within the Exclusive Economic Zone.

Coastal Protection Zone (CPZ)

The CPZ includes areas declared as sensitive coastal areas in terms of the *Environment Conservation Act*, any part of the littoral active zone and coastal protection areas that are not part of CPP. It also includes land parcels located wholly or partially within one kilometre of the high water mark that are zoned for agriculture or for undetermined land use; or that, when the Act took effect, were not part of any lawfully established town, urban area or human settlement. It includes land parcels within 100 metres of the high water mark that are part of a lawfully established town, urban area or human settlement.

The CPZ also includes coastal lakes, wetlands, lagoons or dams within the land units referred to above, as well as any part of the seashore or admiralty reserve that is not CPP and any land inundated by the 1-in-50 year flood or storm event.

Coastal access land

This is land that has been designated in order to ensure public access to, and utilisation of, coastal public property.

Coastal waters

Coastal waters are those over which, in terms of international law, the state has jurisdiction. Coastal waters need to be managed in the interest of the entire country, but in accordance with national and international law.

Coastal protected areas

Coastal protected areas are defined as such in terms of the *National Environmental Management Protected Areas Act*, and automatically form part of the CPZ.

Special management areas

These are areas declared as such by the Provincial MEC (Member of Executive Council), based on their environmental, cultural or socio-economic significance.

Coastal set-back lines

The set-back line is a demarcated line, seaward of which the building, alteration or extensions of structures are prohibited or restricted. Set-back lines should also protect coastal public property, private property and public safety. The line should also protect the CPZ and preserve the

aesthetic values of the coast, while ensuring that the objectives of the ICM Act are upheld.

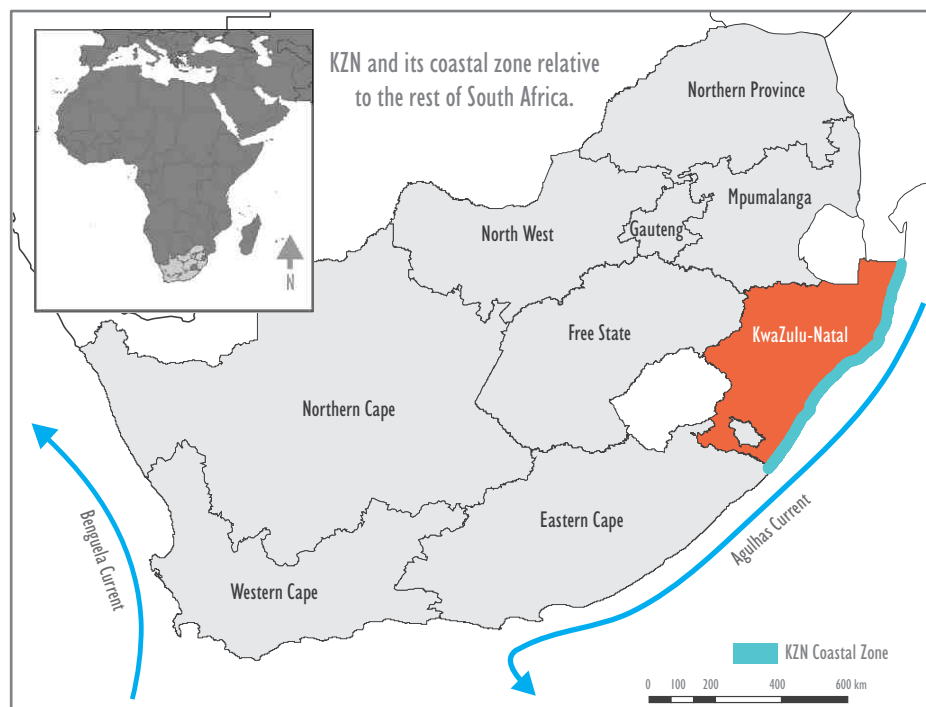
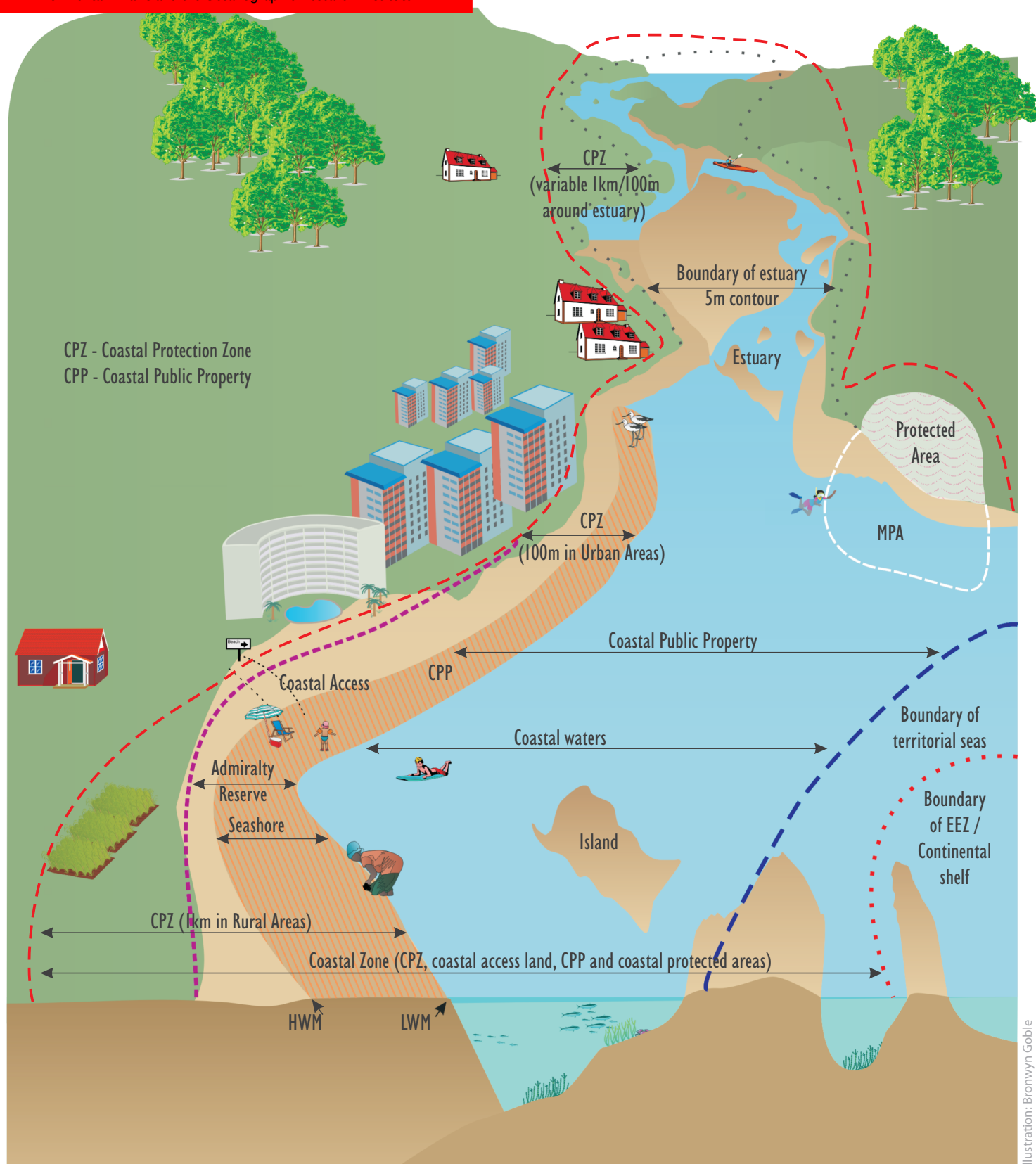


Diagram: Bronwyn Goble

The KZN Coastal Zone

The KZN coast stretches some 580 km from the Mozambique border, near Kosi Bay in the north, to the Mtamvuna Estuary on the border with the Eastern Cape in the south, and encompasses a range of physical environments.

For management purposes the KZN coast is divided into five Coastal Districts, broken up into 11 Local Municipalities.



Graphic representation of the coastal zone as defined by the ICM Act.⁶



1.3 The Coastal Economy

It is not by accident that 40% of the world's population resides within 100 km of the coast: those who don't enjoy that privilege, often make great efforts to visit the coast. South Africa mirrors that trend and in KZN the figure is especially high, at almost 60% (Section 6.1).

The reasons for this coastal preference are not difficult to see. The coastal environment provides a great many opportunities for employment, income generation, recreation and a quality living environment; all cherished attributes of human development, especially economic wealth generation. These features contribute to the greater levels of human settlement in the coastal zone.

In 2011, the GDP of KZN reached R311 billion, equal to 16.5% of South Africa's total GDP, despite having only 7.7% of South Africa's land area. Two primary macro-contributors to the Province's economy are its ports and its tourism, both intimately linked to the coastal and marine environment.

South Africa is a major sea trading nation, where about 51% of national GDP is generated from the import and export of goods via our seaports. As Richards Bay and Durban together handle 63% of South Africa's sea cargo and more than 50% of vessel traffic, it follows that these coastal towns are major drivers of the South African, and thus the KZN, economy. As the busiest port in Africa, cargo values flowing through the

The KZN coastal zone supports a range of commercial and small-scale economic activities.



Photo: Kierran Allen

Port of Durban are estimated to have reached more than R160 billion per annum. Not only do the Ports of Durban and Richards Bay underpin much of the KZN economy, they also stimulate and support high levels of employment associated with manufacture, sea trade and transport (see *Section 6.3*).

A second macro-economic driver is tourism, especially coastal. In one year (e.g. 2011) KZN welcomes around 8.2 million tourist visits, some 1 million being foreign. Together, they spend more than R12 billion, with 60% of this attributable to foreigners. The beach and coastal zone attracts an estimated three out of four of these visitors, suggesting that coastal tourism spend in KZN is equivalent to around R9 billion per annum.

Features that attract visitors to the coast are diverse and include its beaches, water sports, diving, fishing and general biodiversity and ambiance of the KZN coast. Clearly, this calls for high standards in environmental quality and management. But the benefits do not only accrue at the macro level. For the individual there are diverse economic opportunities uniquely associated with the coast. A number of these small to medium economic drivers have been studied.

Economic drivers along the KZN coast

Unlike the Western Cape, KZN is not particularly renowned for its commercial fisheries. Yet, fisheries in KZN represent a significant economic asset and contributor to food security. In a good year, trawlers take around 300 tons of deep water shellfish and up to 500 tons of shallow water prawn on the Tugela Bank. Besides providing employment, this catch generates R100 million at the market and even more in downstream restaurants.

In 1995, the annual expenditure by recreational anglers in South Africa was calculated at R1.8 billion. Given inflation over time and the prevalence of angling in KZN, it is safe to assume that anglers in this Province currently spend in excess of R1 billion on their activities each year. Annually, 40 000 launches by at least 2 000 recreational and commercial ski-boats land about 1.4 million fish, totalling around 1500 tons, and valued at R180 million. The craft, gear and bait used by these 30 000 offshore fishers is valued at some R700 million per year, much of it locally sourced. These offshore fishing activities take place from any of about 30 registered launch sites along the KZN coast, thereby generating considerable

local economic benefits. A case in point is Sodwana Bay, where the boat-based angling is valued up to R14 million yearly. Shore angling also has economic implications. Annually, around 50 000 shore anglers in KZN catch about 600 000 fish, totalling 270 tons, and with a market equivalent value of R16.3 million.

Fishing in KZN's estuaries also has economic implications for the Province. In Richards Bay, anglers spend more than R6 million on their activities every year, despite low catch rates. Durban Bay anglers spend about R8 million and by extrapolation to include Kosi Bay and St Lucia, anglers spend R30-40 million on fishing in the main KZN estuaries annually. Significantly, this is of social and economic benefit to residents close to those estuaries.

The shores of KZN are rich in marine life and each year thousands of permit holders benefit from this by harvesting a great variety of shellfish, including crayfish, oysters, mussels and octopus. In a good year, 100 tons are landed, approximately equivalent to R11.4 million at source.

These medium economic drivers are not confined to extractive use of resources. Scuba diving has seen enormous growth in KZN, notably at Sodwana Bay, Aliwal Shoal and Durban. At Sodwana the number of dives have peaked at 100 000 annually and substantially benefit local operators and the conservation authorities to the tune of almost R50 million per annum. Similarly, the towns of Scottburgh, Umkomaas and Park Rynie are beneficiaries of some 40 000 dives annually on Aliwal Shoal, generating around R40 million for the local economy.

Coastal wildlife tourism also has economic implications, as seen in many countries, and increasingly in KZN. For example, shark encounters through diving has become increasingly popular. One such activity, specialist diving with tiger sharks on Aliwal Shoal, was calculated to directly benefit the region to the value of R12.5 million annually.¹ There are also economic opportunities to encounter whale sharks, the largest fish in the sea. Globally, whale tourism has more than 4 million participants annually, generating more than R5 billion in revenue. In South Africa, dolphin and whale boat-based tourism is also an economic asset, injecting at least R45 million into the economy, some of it very localised outside of urban centres. The seasonal whale migrations along the KZN coast are already hugely popular, with close on 5 000 whale watchers participating in dedicated boat trips annually, and viewing at least five species of whale,



generating considerable localised revenue. Another wildlife activity is that of turtle tourism, especially in the iSimangaliso Wetland Park, where local community members are trained to take visitors to view nesting turtles for a fee.

The annual sardine run (*Section 5.2*) draws thousands to the coast and generates significant localised revenue. In the Ugu district of the Hibiscus Coast this seasonal event is a huge economic asset for the 110 000 rural community residents living close to the coast. In a good year, their involvement in the fishery, selling of products and servicing visitors to injects R36-54 million into the local informal economy.

Value of the KZN Coast

The above snippets of economic data for the coast only provide a two-dimensional and mostly incomplete “jig-saw puzzle” of economic values. Not only are the data sets incomplete, but they have been calculated using different methodologies, making integration near-impossible.

In 1998, a group of experts drafting the White Paper for Sustainable Coastal Development, teamed up to calculate a more realistic and comprehensive value of economic benefits derived from the South African coastal zone. They posed questions such as: What if coastal erosion damaged bathing beaches? What if the sea failed to assimilate sewage waste? What if our ports silted up? What if our fisheries collapsed? and so on. They recognised the underlying economic implications of each of a wide range of coastal attributes and assessed both the direct and indirect value of each. They concluded that the benefits derived from the coastal goods and services was, at that time, in the region of R168 billion annually, with an additional R134 billion annually as a result of indirect benefits, such as erosion control and waste treatment.² At the time, this equated to some 27% of the national GDP. Although no assessment was made for KZN, by simple extrapolation and considering inflation, the value of coastal benefits in this Province could be in excess of R70 billion annually.

In 2000, the United Nations spearheaded a global initiative to assess the consequences of ecosystem change for human well-being, called the Millennium Ecosystem Assessment (MEA). Over the following five years, experts from 95 countries assembled information about ecosystem goods and services. Central to this programme was the recognition of four interdependent categories of ecosystem services, namely:

Provisioning, being the products obtained from ecosystems; Regulating, being those benefits derived from the regulation of ecosystem services; Cultural, being the non-material benefits people derive from ecosystems; while Supporting are those services necessary for the production of all other ecosystem services.³

These goods and services are derived, to a greater or lesser extent, from all KZN coastal and marine ecosystems, including the oceans, sandy beaches, rocky shores, estuaries, mangroves, reefs, etc. Significantly, they provide a mechanism to assess the economic value of each of these ecosystem goods and services.

Ecosystem Goods and Services		
Provisioning	Regulating	Cultural
- Food: fish - Timber and fuel - Building materials - Minerals - Curios - Fibre - Medicines	- Atmosphere and climate regulating - Hydrological balance - Disease control - Waste assimilation - Erosion control - Storm and flood protection	- Recreational - Spiritual and religion - Aesthetic - Inspirational - Educational - Heritage
Supporting		
- Nutrient cycling - Provisioning of habitat - Primary production - Supporting life cycles		

Several global studies have been published to reflect the economic value of these ecosystem services. For example, it has been estimated that the Earth’s ecosystems provide at least US\$33 trillion worth of services annually, including gas regulation (US\$1.3 trillion), disturbance regulation (US\$1.8 trillion), waste treatment (US\$2.3 trillion) and nutrient cycling (US\$17 trillion). Significantly, an estimated 63% is contributed by marine systems (US\$20.9 trillion), most of this from coastal systems (US\$10.6 trillion).⁴

These studies identified eight coastal ecosystems, namely estuaries and wetlands, mangroves, lagoons, the intertidal

zone, kelp, rock reefs, seagrasses and coral reef areas. All eight of these coastal systems contribute to the provision of food, provide cultural and amenity services, and aid in flood and storm protection. A global study in 2007, which compared the coastal ecosystems goods and services for all sea-bordering countries, estimated that for South Africa, the natural coastal environment provides some R608 billion (US\$6 766 million) in ecosystem goods and services annually.⁵ Proportionately, this equates to some R100 billion per annum for KZN.

A large proportion of these ecosystem services are non-market related and therefore it is difficult to understand their actual value and to factor into management and policy. However, proper assessment of the value of ecological goods and services and

awareness as to the contribution of these is needed to improve the management of these ecosystems.

Whichever study is adopted and whichever coastal ecosystem goods and services are considered important, the reality is that the marine and coastal environment is of huge economic significance to the nation, and notably to KZN. Even at the medium and micro level economic benefits and opportunities exist. It is thus not surprising that the new KZN Tourism Master Plan has placed the coast as its central vision for economic development. However, despite this glowing assessment and the well-intended visions, it remains a concern that some of our poorest communities reside at the coast, paradoxically amid great potential wealth. This legacy of the past can surely be reversed. ■

Relative global contributions of different coastal ecosystem services derived from coastal resources.
The larger circles represent a higher relative magnitude of contribution to coastal ecosystems services.⁵

Direct and indirect services	Estuaries and Marshes	Mangroves	Lagoons and Salt Ponds	Intertidal	Kelp	Rock and Shell Reefs	Seagrass	Coral Reefs
Food	●	●	●	●	●	●	●	●
Fibre, timber, fuel	●	●	●					
Medicines, other	●	●	●		●			●
Biodiversity	●	●	●		●	●	●	●
Biological regulation	●	●	●	●				●
Freshwater storage and retention	●		●	●				
Biochemical	●	●			●			●
Nutrient cycling and fertility	●	●	●	●	●	●		●
Hydrological	●		●					
Atmosphere and climate regulation	●	●	●	●		●	●	●
Human disease control	●	●	●	●		●	●	●
Waste processing	●	●	●				●	●
Flood/storm protection	●	●	●	●	●	●	●	●
Erosion control	●	●	●				●	●
Cultural and amenity	●	●	●	●	●	●	●	●
Recreational	●	●	●	●	●			●
Aesthetics	●	●	●	●				●

