



# Coastal Management

## Seen Environmental Learning Information Sheet no 10

### Introduction

The African coastal zone stretches 40 000 kilometres and supports a diversity of habitats and resources. These include mangroves, rocky shores, sandy beaches, deltas, estuaries and coastal wetlands, coral reefs and lagoons. Like the rest of the world, Africa is experiencing rapid population growth, industrial expansion and infrastructure development along its coasts. Most of the 32 African countries with a coast –

Namibia excepted – have their capital cities on the coast. The demand for resources and infrastructure development in the coastal zone is putting pressure on fragile ecosystems. Namibia’s coastline stretches from the Kunene river in the north to Oranjemund in the south. The entire coastal area is desert and much of it is national conservation areas. The main human activities, key impacts and potential threats to Namibia’s marine environment are listed below

### Major Namibian Threats

Human Activity	Type of impact	Threat	Consequence
Air pollution	Global atmospheric change	Increasing environmental variability	Reduced national economic growth
Fishing	Destructive fishing practices	Over exploitation of stocks	Reduced employment Threats to natural resource based industries
Aquaculture	Discharge of toxic chemicals Imports of exotic fish	Marine pollution Introduction of harmful exotic species, parasites and diseases	Altered functioning of coastal ecosystems
Marine transport	Discharge of oil and waste	Marine pollution Introduction of harmful exotic species, parasites and diseases	Altered functioning of coastal ecosystems
Tourism	Construction, off-road damage, Overexploitation of fish	Over-exploitation of stocks Habitat loss and degradation	Reduced employment
Coastal Infrastructure	Dredging, construction of piers	Marine pollution Habitat loss and degradation	Altered functioning of coastal ecosystems
Agriculture	Discharge of nutrients and pesticides	Marine pollution Habitat loss and degradation	Altered functioning of coastal ecosystems
Coastal urban and industrial development	Conversion of wetlands, discharge of sewage and	Marine pollution Habitat loss and degradation	Altered functioning of coastal ecosystems

	wastewater, garbage dumping		
Coastal and seabed mining	Dredging, discharge of slimes	Marine pollution Habitat loss and degradation	Altered functioning of coastal ecosystems
Oil and gas exploration	Drilling, dumping and oil spills	Marine pollution Habitat loss and degradation	Altered functioning of coastal ecosystems

### Coastal and offshore mining

In terms of scale, impact and economic importance, diamond mining is the most prominent industrial activity in Namibia. Because mines are located in isolated areas, they require substantial infrastructure and cause lasting changes to the environment. Before 1994 when a Minerals Agreement was signed between NAMDEB and the Namibian Government, mining was carried out in great secrecy with little regard for its impact on the environment or the idea of 'sustainability'. Today Environmental Management Plans (EMP's) are required for all operations, but much of the damage was caused in the past and this may never be put right since no money has been set aside by the company or the government for it. This damage includes:

- Removal of tidal habitats and habitat destruction through roads and towns
- Disposal of sediments in the ocean and its effects on marine life
- Huge waste mounds
- Accumulation of waste (machinery, buildings) since nothing may be removed
- Scarring of the desert through transport

And in Oranjemund:

- Waste and littering by residents
- Habitat disturbance and biodiversity loss
- High water use, groundwater and river pollution
- Wood collecting, fishing and illegal hunting of wildlife

Against this damage are the positive benefits of employment creation, foreign currency earnings, the stimulation of the national economy and training and skills development in mining.

### Oil and gas exploration

Offshore petroleum exploration began in Namibia in the 1970's when significant deposits were discovered. The Kudu deposit, located 70km west of Oranjemund will shortly be exploited by Shell who plan to build a large power plant using the gas to generate electricity while exporting the surplus to South Africa. As part of the development Shell will be required to conduct an 'Environmental Impact Study' to demonstrate that no lasting damage to the environment will result. Drilling at sea is sophisticated and a well-established process exists to minimise the pollution from:

- drilling the well
- disposing of mud,
- cementing and capping the well and
- disposing of waste from the rig where hundreds of workers are housed.

Since any toxic waste is brought to land, government is investigating the development of a toxic waste disposal plant in Luderitz. Of greater concern may be the land site for the development of the gas-powered power station. However, it is the intention to use an area already previously damaged by diamond mining in order to minimise further disruption.

### Tourism

Tourism is Namibia's fastest growing industry and 3rd largest contributor to GDP. There are three major coastal settlements – Swakopmund, Walvis Bay and Lüderitz. All of them depend on water that is piped from the interior. With its magnificent dunes, cool temperatures and fascinating vegetation – including the unusual Welwitschia, Swakopmund has a thriving tourism industry. Walvis Bay is the harbour for

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the important fishing industry, but is also home to some of the rarest birds in its wetland. Swakopmund has always been the most popular holiday resort for Namibians during the heat of the summer, and Windhoekers flock there in their droves during summer to experience the cool weather brought on by the mists. This has led to many locals maintaining holiday residences in the greater Walvis Bay area, and there are ongoing proposals for new residential developments. Throughout the year, foreign tourists visit the town too. This brings welcome foreign exchange to the economy, and provides employment for the locals through hotels, numerous bed and breakfast establishments, restaurants, curio shops, ... and quad biking on the dunes. The growth of local and foreign tourism has brought many tangible economic benefits. However, tensions exist between the development and conservation of the area as a result of some of the negative effects of tourism listed below.

Activity	Possible Impact	Risk
Shore based angling	Over-fishing, habitat destruction, disturbance of seabird breeding, litter	High
Ski boat angling	Over-fishing of certain species	High
Nature tours	Visual pollution (tracks), disturbance of bird breeding, seabird mortalities	Low
General leisure activities	Littering, disturbance of bird breeding	Low
Off-road driving	Visual pollution, disturbance of breeding, seabird mortality, disturbance to beach goers	High
Para gliding	Visual pollution (cars), distraction of motorists	Low
Cray fishing	Over-fishing around Swakopmund	Medium
Pleasure flights	Disturbance of birds, noise	High

High = a serious problem needing attention  
 Medium = not serious, but likely to become so  
 Low = not serious, infrequent or localised

The following case studies explore some of these tensions: on the one hand, Namibia needs to encourage tourism and industry; on the other, whatever is done needs to be done in a way that makes for sustainable development and protects the environment

#### **Case Study: Residential Development**

This case study shows how the need of a municipality to generate revenue through a coastal residential development is pitted against conservation and environmental impact issues.

Conservationists and developers are at loggerheads over a residential development that is proposed between Walvis Bay and Swakopmund. The Walvis Bay Town Council gave an in-principle go-ahead in 2004 for three developers to develop some 275 000 square metres just south of Dolphin Beach, known as 'Guns' (Farm 46). The advertisement for the development states, 'Get a slice of the ultimate life' and describes the location as the 'most sought-after seaside resort along the Namibian coast'.

Several concerns have been raised, including:

- The advertising of the public auction of plots for the development at Guns was done prior to the Ministry of Environment and Tourism issuing a clearance certificate for the environmental impact assessment of the project.
- This portion of coast has some of the most diverse and rich bird life on the southern African coast. During the summer months it is particularly rich because of the migrants from the northern hemisphere. It is an important breeding ground for the Damara tern and Black Oyster Catchers and is currently zoned as a conservation area.
- The land is actually a conservation area, and has not been rezoned yet.
- The coastal towns and local industry are growing fast, as is the domestic and industrial water demand in the area.
- Possible "climate change, brought about by the development, with possible reduced rainfall and reduced run-off.

Residents signed a petition objecting to the development before a comprehensive strategic assessment of the whole Walvis Bay area had been done.

### **Case Study: Threats to Dunes**

This case study shows how activities brought about by tourism to an area can threaten the ecosystem of an area.

Tourists and locals alike are in awe of Namibia's amazing dunes, and love to climb them on foot and ride quad bikes on them. There are several companies licensed to operate quad biking tours in the dunes; but aside from that, there were an estimated 400 private owners of quad bikes in the area in 2004.

Off-road vehicles on beaches and in the dunes can have a major impact on dune systems. Trampling of dune vegetation may alter the dune ecosystems. Recovery in dune systems is very slow and may take hundreds of years. Dune systems are also under threat from development, including building construction.

To curb the destruction of dunes, while at the same making allowance for the activity, the Municipality of Walvis Bay passed a by-law in January 2004 that prohibits camping and driving on beaches or dunes within its jurisdiction. In terms of the law, camping overnight on the beach between Walvis Bay and Swakopmund is not allowed. People caught camping illegally may be fined or imprisoned. Quad bikes and off-road vehicles may only use demarcated routes, and are not allowed on public roads, vegetated areas, the Damara Tern area and bathing areas. A speed limit of 20 km/h was proclaimed on roadways on the seashore.

However, enforcement of the by-law remains an issue, as the municipality does not have sufficient personnel to monitor the area full-time. In 2003, a private contract was awarded to a Windhoek-based company, only to be rescinded later when local residents opposed it.

### **Case Study: Terrace Bay**

This study illustrates the impact that leisure activities may have on the environment.

Stretching northwards from Ugabmond, the Skeleton Coast Park is a pristine wilderness of rock, dune, fog and sea. Rivers flow in the area after rainfall and flood waters support a variety of endemic plant and animal life, including the desert elephant. Access to the area has always been limited due to the fragility of the environment.

The Skeleton Coast Park is controlled by two Ministries - Environment and Tourism, which controls the coastline, and The Ministry of Fisheries and Marine Resources. The area attracts mainly fishermen who drive long distances to catch, clean and freeze excessive quantities of edible fish.

Conservationists are concerned about the vehicle tracks left behind by visitors to the area. According to Ministry officials there were 150 unsightly vehicle tracks within the designated fishing area, some of which had disregarded "no entry" signs. These leave permanent marks in the sand. The tracks include those of armoured vehicles, possibly made on presidential fishing trips.

### **Case Study: Hazardous Waste**

This study again illustrates the tension between the need for the government to attract new business while at the same time, preserving the environment.

The South African waste-management company called Enviro-Serv approached the Walvis Bay municipality with the intention of setting up a plant that converts municipal solid waste to energy. The waste was to be imported from New York. Environmentalists protested against using the Namibian coastline for to dump waste, and the Namibian Government responded by categorically stating that it would not entertain the notion of a project proposal to use imported solid waste to generate energy.

This is in keeping with Agenda 21, which emphasises the paramount importance of

ensuring effective control of the generation, storage, treatment, recycling, transport and disposal of hazardous wastes for proper health, environmental protection, natural resource management, and sustainable development.

**Case Study: Litter in Swakopmund**

The issue of litter is not complex at all. It is damaging to the environment and unsightly. But the issue crops up again and again around the issue of who is responsible for its clean-up. Of course, the issue would not arise at all if we humans took responsibility for not littering in the first place.

Thousands of Namibians flock the coast each December to enjoy the cool climate. And each year, there is an outcry about the amount of litter they leave behind on this stretch of coastline. Although a by-law prohibits the dumping, depositing, leaving, spilling, dropping or placing of anything that affects the cleanliness of beaches, including bait, fishhooks or offal, this law is not respected by many tourists. Another issue is the question of which authority is responsible for the clean up. While the Municipality is responsible for the cleanliness of the beaches, when big events occur, such as the annual Vasbyt 4x4 and New Year's bash, the clean-up is the responsibility of the lessee.

**Tools for promoting sustainable development**

Namibia's draft Environmental Management Bill (currently Jan 2005, awaiting Parliamentary debate and approval) states that:

"Sustainable development means human use of a natural resource, whether renewable or non-renewable or the environment, in such a manner that it may equitably yield the greatest benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations and includes the maintenance and improvements of the capacity of the environment to produce renewable resources and the natural capacity for the regeneration of such resources."

This implies two things: that development must strive to improve human conditions and that there is a need to preserve the constancy of natural capital stock. The need to ensuring that conservation supports development and that development does not degrade the 'natural stock', has led many governments to ratify international conventions, develop inter-sectoral policies and plans (eg. NDP 2) introduce regional land use plans and planning controls such as Environmental Impact Assessments before allowing development to proceed. These provide a framework within which everyone should operate.

Unfortunately in many countries, Namibia included, many projects still commence without an EA being performed or where the EA is "withheld" from the public to prevent full discussion taking place (see Information sheet on Ramatex) Only by introducing an overall environmental management framework (such as the current bill) and ensuring that different government departments, private enterprise and individuals adhere to the regulations, can conservation and development work in harmony

### **Ideas to stress in your teaching and learning**

- Coastal ecosystems in many parts of Africa are being threatened by pollution, habitat loss and degradation as a result of infrastructural development, tourism and fishing.
- Coastal and offshore diamond mining has had the most destructive effect in Namibia. No money is available to put right this damage.
- Today all new activities must have an Environmental Management Plan showing how environmental damage will be minimised.
- Pollution through toxic waste from the Kudu field oil and gas exploration is expected to be minimal and disposed of through a new plant built for this in Luderitz.
- Tourism results in a high risk of damage/disturbance to bird breeding grounds and overfishing, as well as visual pollution and disturbances from off road driving and quad-biking.
- Conservation measures limiting access by vehicles to certain areas as well as residential development zoning are in place to protect the coastline around Walvis Bay and Swakopmund.
- Conservation regulations require awareness, monitoring and enforcing in order to be effective.

### **Glossary**

<b>Aquaculture</b>	The farming of marine and freshwater plants and animals for human consumption- the rate at which we use something such as a resource.
<b>Degradation</b>	The decline in the quality and performance of the environment.
<b>Delta</b>	A triangular deposit of sand and soil at the mouth of a river or inlet.
<b>Ecosystem</b>	A group of interdependent organisms together with the environment they inhabit and depend on.
<b>Estuary</b>	The wide lower course of a river where the tide flows in, causing fresh and salt water to mix.
<b>Habitat</b>	The natural conditions and environment in which a plant, animal or person lives.
<b>Infrastructure</b>	The basic organisation on which something is built or based.
<b>Lagoon</b>	A coastal body of shallow water formed where low-lying rock, sand, or coral presents a partial barrier to the open sea.
<b>Mangrove</b>	A tropical evergreen tree or shrub with intertwined roots and stems resembling stilts that grows in dense groups of plants along tidal coasts.

### **Sources/Further Reading**

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