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What you can do

- Celebrate National Marine Week.
- Find out how the international Blue Flag programme is helping keep beaches in South Africa clean and healthy. Visit www.blueflag.org
- Find out about International Clean-Up Day, the biggest clean-up in the world! It involves volunteers from over 120 countries who clean up beaches to remove litter and waste from the shore and the water (www.coastal.cleanup.org). In South Africa, the Vodacom Beach Clean-Up Programme employs cleaners to ensure that many of our popular beaches are clean and safe for people and wildlife.

Further reading

South African Environment Outlook. A report on the state of the environment. 2006. Dept. of Environmental Affairs and Tourism.

Useful addresses

Oceanographic Research Institute (ORI). PO Box 10712, Marine Parade, Durban 4056. Tel (031) 328 8222; Fax (031) 328 8188; E-mail ori@saambr.org.za; Website www.ori.org.za

Southern African Foundation for the Conservation of Coastal Birds (SANCCOB). PO Box 11116, Bloubergrant, 7443. Tel (021) 557 6155; Fax (021) 557 8804; Website www.sanccob.co.za

Dolphin Action and Protection Group. PO Box 22227, Fish Hoek, 7974. Tel (021) 782 5845; E-mail info@dapg.org.za; Website www.dapg.org.za



The Enviro Facts Project is sponsored by Pick 'n Pay through WWF-SA. The fact sheets have been developed with the support of several NGOs, government departments, academic institutions, and individuals. A full set of 60 Enviro Fact sheets is available from Share-Net. Please write to: Share-Net, Enviro Facts Project, PO Box 394, Howick, 3290. Tel (033) 330 3931 ext 124/143/144; Fax (033) 330 4576; e-mail sharenet@wessa.co.za

In the quest for living and working more sustainably we have printed this enviro fact using non-toxic ink that is derived from soya, rather than petroleum. We use a wet ink process that requires no metallic toner or energy demanding heat, and solar energy, from current sunlight, rather than a fossil-fuel based, energy source. We hope you will enjoy reading this fact sheet and join us in seeking to live more sustainably.

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February 2009

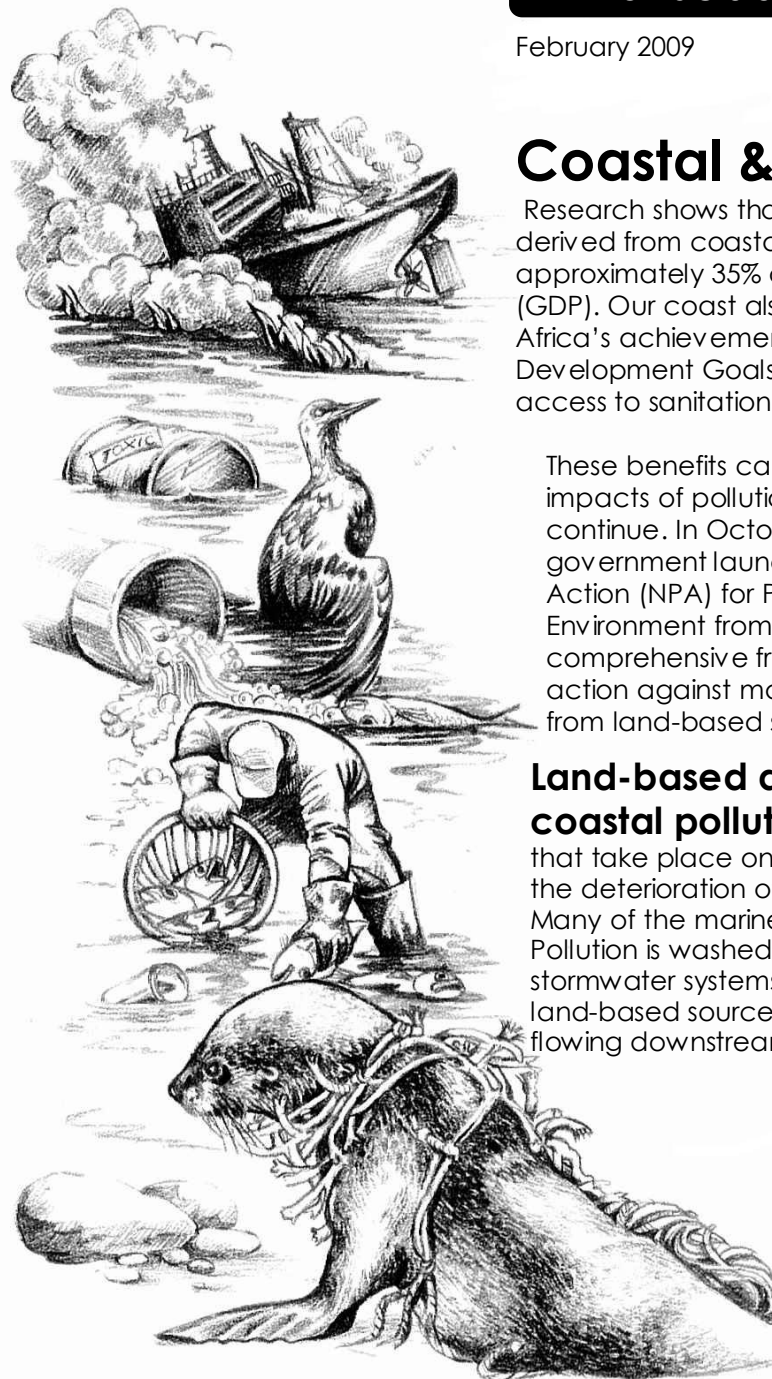
Coastal & Marine Pollution

Research shows that the value of direct benefits derived from coastal resources in South Africa is approximately 35% of the Gross Domestic Product (GDP). Our coast also contributes directly to South Africa's achievement of the United Nations Millennium Development Goals, e.g. poverty reduction and access to sanitation and health.

These benefits cannot be sustained if the negative impacts of pollution on coastal ecosystems continue. In October 2008, the South African government launched the National Programme of Action (NPA) for Protection of the Marine Environment from Land-Based Activities. The NPA is a comprehensive framework to organise and mobilise action against marine pollution and degradation from land-based sources.

Land-based activities that cause coastal pollution. Pollution caused by activities that take place on land contributes significantly to the deterioration of the coastal marine environment. Many of the marine waste problems start on the land. Pollution is washed down to the sea via rivers and stormwater systems. 80% of all marine pollution is from land-based sources like pipelines and plastic pollution flowing downstream and into the sea.

- **Municipal wastewater.** This is mainly household or domestic sewage effluent (wastes discharged as liquid waste) and seepage from septic tanks. There are over 80 marine outfall pipes along the South African coast discharging tens of millions of litres of domestic



sewage effluent and industrial wastewater into the sea each day. The management and licensing of these pipes will be controlled through the NPA framework of action.

- **Wastewater from industries.** This includes wastewater from food processing factories or fertilizer factories and desalination plants. Warm water from power stations and industrial activities also affect marine life.
- **Stormwater.** Stormwater or urban runoff systems collect and channel water (usually rainwater) from all non-porous or hard surfaces, e.g. tarred roads, parking areas and pavements. This water usually flows into rivers, wetlands or the sea. There is growing concern in many of South Africa's cities about the quality of water in rivers especially as many of them run directly into the sea, affecting seawater quality. It is very difficult to control stormwater and the first stormwater flows at the start of the rainy season usually contain high levels of pollutants, such as heavy metals, oil residues, litter, and disease-causing (pathogenic) bacteria. In informal settlements lacking adequate sanitation infrastructure, stormwater runoff can often carry sewage down to the coast. Increasingly, pollution of seawater is caused by illegal interconnections of the sewer and stormwater systems. This abuse of the sewage system by developers or owners of private property is on the increase especially in areas of high development.
- **Solid waste disposal.** Close to 80% of the rubbish found on beaches is washed, blown, or dumped from shore. Litter continues to be dumped into streams and rivers that flow to the sea from many inland sources, so that litter dropped kilometres from the sea travels down stormwater systems and rivers to end up on the beach. In South Africa, plastic makes up approximately 90% of marine litter.
- **Agricultural practices.** Where pollutants from fertilizers leach or flow into the sea, higher levels of nutrients such as nitrates and phosphates in the water occur. These nutrients can over-stimulate the growth of aquatic plants and algae and can lead to algal blooms.

Activities at sea causing coastal pollution. There are also activities that take place at sea, i.e. non land-based activities, that contribute to coastal marine pollution.

- **Maritime transportation.** This includes accidental and deliberate oil spills. South Africa is on one of the busiest shipping routes in the world. With very rough seas off the coast, human error, a world tanker fleet of ships that are old and not well-maintained, as well as deliberate discharges of waste, oil pollution is a real threat around our coast. In 2000, a ship, the *MV Treasure*, sank and released 1 000 tonnes of heavy fuel oil into the sea off Cape Town harbour.

Thousands of volunteers helped rescue and clean tens of thousands of African Penguins affected by the oil pollution. To find out more, visit www.sanccob.co.za

- **Dumping of waste at sea.** Pollution sources at sea include accidental and deliberate discharges of oil, operational dumping of rubbish (particularly plastics) and controlled dumping. The cargo of a ship involved in an accident may also be a pollution threat. South Africa is a signatory to the London Convention (www.londonconvention.org) that seeks to control dumping of waste at sea.
- **Aquaculture.** Wastewater discharged from fish farms carries high levels of organic waste, larvae and/or diseases. Aquaculture is increasing in South Africa and this may become a problem.
- **Off-shore exploration and production.** This is another activity contributing to marine pollution. Examples include oil exploration rigs.

Effects of marine pollution

- Sewage effluent, or industrial effluent rich in organic material, e.g. from fish processing factories, present a number of problems.
 - When organic matter decomposes, levels of oxygen dissolved in the water decrease which can cause marine animals and plants to die, and this may lead to changes in biodiversity.
 - Effluent that is rich in nitrogen and phosphorus, results in eutrophication (over-fertilisation) that may cause algal blooms. Blooms of algae can discolour water, block up or clog fish gills, and may even be toxic (poisonous).
 - Pathogenic (disease-causing) micro-organisms cause ear, nose and throat infections or gastric infections, hepatitis, cholera and even typhoid. Eating shellfish from polluted water poses a health risk as filter-feeding animals (e.g. mussels and oysters) concentrate pathogens in their intestines.
- Plastics kill many birds and marine animals. Floating plastic bags are often mistaken for food by sea turtles. Thousands of seals, whales and birds die every year from entanglement in fishing lines, strapping bands and other debris.
- By preventing respiration, oil spills suffocate plants and animals. Exposure to oil pollution causes a breakdown in thermal insulation in birds and other animals. Oil pollution is an eyesore and cleaning up and disposing of oily waste is difficult.
- Pesticides and other chemicals accumulate in the fatty tissues of animals and can result in physiological damage, harm reproduction or cause behavioural problems.