

# Executive summary

The Benguela Current region (GIWA region 44) includes the entire extent of the Benguela Current system and the freshwaters that drain into it. The region spans five countries, including Angola, Namibia, Botswana, South Africa and Lesotho. The total coastline of the region extends some 4 590 km from the Angolan enclave of Cabinda in the north to Cape Agulhas at the southern tip of the African continent. The combined Exclusive Economic Zones of the three coastal states covers some 1.9 million km<sup>2</sup>, with an estimated 1.4 million km<sup>2</sup> falling within the Benguela Current region.

The cold, northwards-flowing Benguela Current system to a large extent controls the climate of the region, which is for the most part arid or semi-arid. The climate in turn influences the human dimensions of the region, with the drier western areas being more sparsely populated than the wetter eastern parts. The region is characterised by high variability, both in natural processes such as rainfall and upwelling, and also in socio-economic processes, with the highly industrialised Gauteng Province of South Africa contrasting dramatically with subsistence-based activities in Angola. The variability in the human dimensions translates into differing anthropogenic activities in different parts of the region, and hence into differing environmental impacts across the region. A major difference in the environmental impacts is evident between the freshwater and marine systems of the region, and these systems were therefore assessed separately.

Environmental impacts surrounding the unsustainable use of freshwater resources are severe in the region, while the impacts of this environmental degradation on the social and economic dimensions are considered moderate to severe. This, together with the backdrop of the natural aridity of the area, resulted in the GIWA concern of Freshwater shortage being highlighted as a priority for further analysis. Modification of stream flow through the construction of dams and the overabstraction of water for agriculture and industry was considered to

be the major contributor to Freshwater shortage in the region. Pollution of freshwater resources through a number of avenues is also considered to be severe in the region, as are the impacts of changes in the water table due to overabstraction of aquifers with long replenishment times. Although some measures are in place to address the problems of freshwater shortage in the region, the outlook for 2020 remains poor.

Almost all forms of pollution of freshwater systems are assessed as being severe, resulting in the overall assessment that the GIWA concern Pollution is severe in the freshwater systems of the Benguela Current region. The primary issue of concern related to pollution of the marine environment is that of oil spills, which have profound environmental and economic impacts. Microbiological pollution, and pollution by solid waste are considered to be moderate, although highly localised, while pollution by suspended solids as a result of marine mining activities is also considered moderate but more diffuse. The prognosis for 2020 is of further deterioration of all types of pollution across the region.

The modification and loss of freshwater habitats and communities of the Benguela Current region is assessed as severe. All major freshwater habitats are considered to have undergone some form of transformation, and much loss of habitats and ecosystems was also evident. In the marine environment, modification and loss of ecosystems and habitats is assessed as moderate. Of particular concern are coastal lagoons, estuaries and mangroves. The projection for the future is that habitats and communities within the Benguela Current region will continue to be transformed, and that further losses of habitats and ecosystems will occur.

Due to a low level of activity related to freshwater fisheries in the Benguela Current region, and the overwhelming importance of marine fisheries, the GIWA concern of Unsustainable exploitation of fish and other living resources was assessed only in the marine

environment. Overall the impacts of the concern are assessed as being moderate in the region. Overexploitation was by far the most important contributing issue, with stocks of many marine resources being considered overexploited at present, and with resultant declines in catches having been documented. As a general overview, it would appear as if the larger commercial fisheries are more sustainably managed at present, than are the smaller, and particularly the artisanal, fisheries. The future outlook is of sustainable commercial fisheries, but of a worsening of the current unsustainable exploitation in the smaller and less valuable fisheries by 2020.

The impacts of the GIWA concern of Global change are assessed as moderate in freshwater systems and slight in marine systems. The assessment of global change should be treated with some caution, as this is an area where data are not readily available. Thus, in several cases, although impacts may currently exist, no direct evidence could be found for these, and it is thus likely that the assessment may have underestimated the impacts. The environmental and socio-economic impacts of all issues related to Global change are expected to worsen by 2020.

Two case studies were selected for more in-depth analysis of the root causes of environmental degradation, and for analysis of policy options to address these. The two case studies were selected so as to represent both the freshwater and marine environments of the Benguela Current region. The case study of Freshwater shortage in the Orange-Vaal transboundary river system highlighted modification of stream flow

through dam construction and overabstraction of water as immediate causes of the environmental impacts. Root causes of this issue include political decisions such as prioritisation of industrial water use, lack of coordination among departments, demographic considerations, economic policies, and improvements in technology, particularly irrigation technology. A suite of policy options for addressing these root causes was developed. This revolved around the three thematic areas of changing the way water is perceived and used, effecting holistic planning, and improving existing management of water resources.

The case study of Unsustainable exploitation of inshore finfish in the Benguela Current transboundary system highlighted overexploitation due to excessive fishing effort and degradation of critical habitats such as estuaries and mangroves as immediate causes of the environmental impacts. The root causes of these were identified as political encouragement of small-scale fisheries, governance failures and difficulty of regulation of inshore finfish fisheries, a number of economic considerations, improved capture technology, and poor voluntary compliance. A suite of policy options was developed to address the root causes of overexploitation around the two major themes of reducing access to the fisheries and improving voluntary compliance with existing regulations. A suite of three thematic options was developed to address the root causes of degradation of critical habitats, including introduction of holistic management of these habitats, creation of alternative economic activities in coastal areas, and improved voluntary compliance with existing regulations.