

## **Climate Change and Marine resources**

Climate change presents particular challenges for fisheries in that predicting the likely effects of such changes, particularly in the ocean, is extremely difficult and uncertain. It could, for example, potentially limit the ability of fisheries to contribute to key government imperatives of sustainable use of living resources and ensuring food security through sustainable utilization of economically valuable resources. Globally, observed variability in oceanographic conditions and ocean productivity coupled with noted shifts in the distribution of certain fish populations hint at possible links to observed environmental variability, and hence potential impacts of climate change. Locally, although changes in the physical environment (e.g. long-term change in sea surface temperature; rise in sea level, etc) have been reported for large parts of the oceans off South Africa, such changes have yet to be comprehensively linked to the fish populations, and their indirect impact on the management of these fisheries has yet to be fully assessed/quantified.

Despite these challenges, Branch Fisheries supports the government's planning and implementation efforts through projects that improve the understanding of overall risk, and vulnerability to climate change, of targeted fisheries. The branch attempts to address the potential impacts of climate change in two different ways: by, 1) conducting retrospective data analysis on the response of various marine resources to long-term changes in the environment, based on biological and environmental information. These data are collected as part of the routine biannual resource assessment surveys conducted off the west and south coast of South Africa; and through 2) collaborative research, currently being planned, on the potential impacts of future climate change on the various marine resources; a model-based exercise.

The Ecosystem Approach to Fisheries (EAF) management is possibly one of the best ways to monitor, adapt and mitigate potential impacts of climate change. Future climate change research plans include:

- a risk and vulnerability assessment of the main targeted species to climate change and related phenomena;

- continued monitoring of shifts in certain fish distribution patterns and their observed impacts on trophic levels, fishing communities and the fishing industry;
- research into alternative fish resources;
- implementation of new technologies in aquaculture; and
- estimation of the fisheries' carbon footprint. This will assist in understanding the potential impacts of global mitigation actions on fisheries, especially at the local level.