



BENEFIT Programme

Regional Cooperative Fisheries and Oceanographic Research and Training

By Mick O'Toole

The Benguela is one of the four major eastern boundary current systems in the world. These coastal upwelling regions are important centres for plankton production and rich in pelagic and demersal fish. The Benguela ecosystem supports major commercial fisheries and contributes to food security and the economics of coastal states in Africa.

Fish populations in these upwelling areas are subject to large time scale fluctuations due to environmental changes and fishing pressure. In addition, the interaction and feedback mechanisms as a result of various natural and man-made impacts are poorly understood. Elements of environmental monitoring should be integrated into fisheries management strategies to assess the impacts of environmental fluctuations on resource dynamics.

Angola, Namibia and South Africa share several problems and issues relating to the management of marine resources of the Benguela Current. These include straddling pelagic and demersal fish stocks, deepsea fisheries, marine mammals and environmental effects of offshore oil, gas and diamond exploitation. Lack of institutional capacity, infrastructure, and especially funds, limit effective resource management.

Increasingly, management of the resources of the Benguela Current ecosystem requires a coordinated effort between states of the region. This would contribute to the accuracy of stock assessment and planning of research and training programmes in fisheries and oceanography.

In May 1995, marine scientists and managers from Angola, Namibia and South Africa addressed the Fisheries Resource Dynamics of the Benguela Current ecosystem during an international workshop held at Swakopmund. Marine scientists and managers from several development cooperation partner states, organisations already active in programmes in the southern African region, such as the Dr Fridtjof Nansen programme, the Food and Agriculture Organisation (FAO) and the Intergovernmental Oceanographic Commission (IOC) also participated in this workshop.

The goal of the workshop was to produce a draft science plan to guide the development of scientific capacity in fisheries and oceanographic research in the countries bordering the Benguela system.

This would be achieved through the following:

- assessment and improved understanding of fish stock fluctuations and interactions between stocks that affect fluctuations;
- improved understanding of the effects of the environment and fishing on fish population dynamics;
- improved understanding of long-term stock fluctuations and teleconnections through comparisons of ecosystems;

- training of young scientists and technicians in the region;
- improved infrastructure for regional cooperation in research and resource management.

The defined objectives and terms of reference of the workshop were to identify major research needs, determine project organisation, funding and identify training components.

The science plan identified five broad areas of research to establish the scientific basis for a programme aimed at resource dynamics, the environment and cost-effectiveness to monitor the Benguela Current ecosystem. These were:

- economically and ecologically important marine resources of the region;
- environmental monitoring;
- process-orientated studies in physical oceanography;
- process-orientated studies in biological oceanography and fisheries ecology;
- retrospective or historical time-scale investigations.

The results of the workshop were published in a draft framework document known as *Benguela Environment Fisheries Interaction and Training* or *BENEFIT*. The report formed the basis for a more comprehensive BENEFIT science and implementation plan that would result in the optimal use and management of the living resources of the Benguela ecosystem.

The main beneficiaries of BENEFIT will be the governments, fishing communities and people of Angola, Namibia and South Africa. National universities, technical colleges and marine scientists would also gain from the programme as would national meteorological and hydrological services (Figure 1).

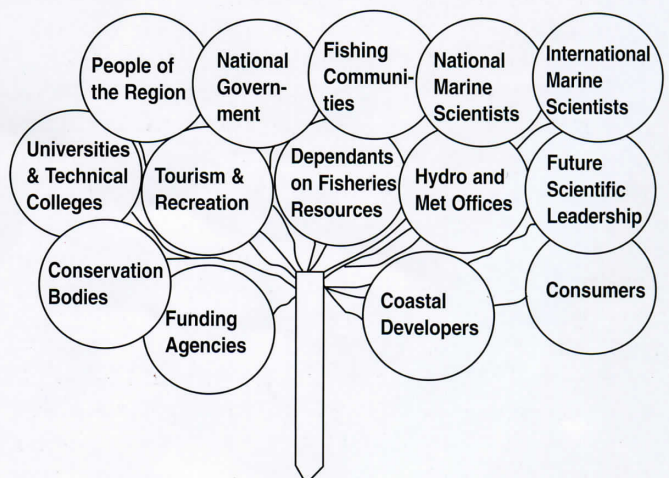


Figure 1

Elements of the BENEFIT science plan

In the area of living marine resource dynamics, research interest will be centred on resource assessment methodology, resource monitoring and the dynamics of fish populations. Research on the environment will monitor the Benguela Current using satellite remote sensing techniques, acoustic doppler current profiling, moored current meter chains and meteorological measurements including automatic coastal weather stations. Oceanographic surveys will routinely measure nutrient levels, plankton production and ground truthing satellite ocean colour and surface temperature data.

Studies on the physical oceanography of the Benguela will concentrate on the dynamics of ocean processes at the mixed layer, frontal systems and boundary layers. The compilation of historical data and the establishment of a regional oceanographic database will support these investigations.

The final element of the Science and Implementation Plan will investigate the linkages between the environment and fish stocks and examine such factors as El Niños, comparative upwelling systems, regime shifts, predator/prey interactions and past climatic scenarios.

Management and coordination

BENEFIT will be managed and coordinated by a two-tiered structure comprising a policy committee at the highest level and a management committee which will provide overall guidance and direction on scientific and technical matters. Angola, Namibia and South Africa have equal representation on the two committees, both of which have the power to co-opt additional experts, including international experts as needed. Both committees have been established and have met a number of times. The current chairman of the Policy Committee is Dr Burger Oelofsen of Namibia. Angola is represented by Dr Victoria de Barros Neto and South Africa by Dr Andy Payne. The Management Committee is currently chaired by Dr Mick O'Toole of Namibia with Angola represented by Ms Filomena Vaz-Velho and South Africa by Dr Johan Augustyn.

The programme will be supported by a secretariat, which is presently based at the National Marine Information and Research Centre at Swakopmund. An executive officer will lead the secretariat in running the day to day operations, programme administration, communication and co-ordination of BENEFIT.

International funding will be sought to support activities including maintenance and modernisation of equipment, and the development of communications, information technology and regional databases to be used by BENEFIT.

The programme will support the training of students from the region, the upgrading of qualifications, sandwich courses, bursaries and research fellowships and programme management groups. (A schematic diagram of the structure of the BENEFIT programme is shown in Figure 2.)

Training and capacity building

Capacity building and training in marine sciences is one of the main objectives of BENEFIT. The programme will provide advanced training for scientists and engineers through on-the-job learning experiences, post-graduate courses and overseas studies. Fisheries managers, technicians, technical assistants, inspectors and officers and crew of research vessels will benefit from new and advanced expanded courses.

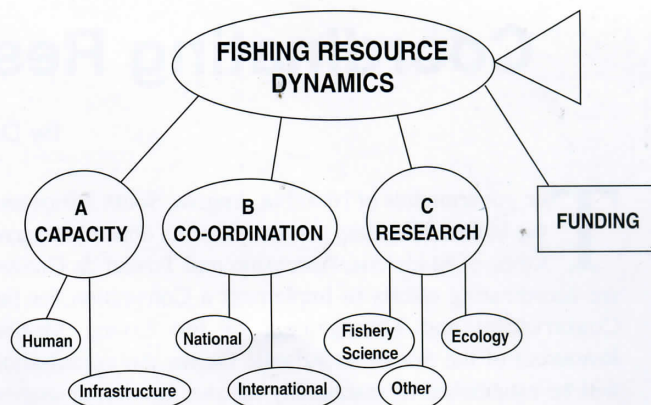


Figure 2

Benefit will try to attract students, especially women, to careers in marine sciences and to strengthen the marine science sectors of the University of Namibia in Windhoek and Augustinho Neto University in Luanda.

Programme affiliations

BENEFIT has been formally linked to the Southern African Development Community (SADC) through project MOZ.42 which was adopted at the Fourth SADC Fisheries Ministers' meeting, held in Cape Town in June 1996. SADC acts as an umbrella mechanism between programmes and partners outside the Southern African region including overseas development and donor agencies.

BENEFIT will also be closely affiliated to international programmes, such as Global Ocean Ecosystems Dynamics (GLOBEC) and Small Pelagic Fish and Climate Change (SPACC), which aim at comparing the effects of global climate on fisheries in world upwelling systems.

Funding and time frame

BENEFIT was presented to the regional and international marine science community at a seminar on the Benguela Current in Cape Town in October 1996. The programme and Science and Implementation Plan were officially launched by the Namibian Fisheries Minister Hifikepunye Pohamba (in Walvis Bay on April 3, 1997) at a ceremony attended by ambassadors from several countries and over 130 invited scientists, senior officials and administrators.

Funding and support for BENEFIT is presently being sought from a number of donor agencies and international institutions. These include the Norwegian Agency for Development (NORAD), under the Dr Fridtjof Nansen Programme; the German Agency for Technical Cooperation (GTZ); the British Department for International Development (DFID); the Swedish International Development Agency (SIDA); the Icelandic International Development Agency (ICEIDA); the Global Environmental Facility (GEF) of the World Bank; and the INCO (INCO = European Commission Cooperation with Third Countries and International Organisations Programme) programme of the European Union.

The first phase of BENEFIT runs from 1997 to the year 2000 and the second phase from 2000 to 2006. The launching of BENEFIT signals a new era of regional and international cooperation in fisheries, environmental and oceanographic research in the Benguela Current Region. This will contribute towards the integrated development and sustainable management of the marine resources within this large marine ecosystem.