Benguela Currents: Africa’s El Nino or Sea of Good Hope?

By Frank A. Campbell

Friday, March 3, 1995 was, in a sense, Namibia’s lucky day. One of those recurring phenomena known as “Benguela Nino” reached its peak in the waters off Southern Africa. “Benguela Nino” is Africa’s equivalent of the El Nino generally associated with South America’s Pacific waters. That day, a major temperature increase brought by Benguela Nino to the waters off Angola caused pilchards to escape in large numbers towards Namibia where the water kept its usual cool. Namibian fishermen must have celebrated.

Next time it may be Angola’s turn. Or South Africa’s, who knows?

That’s how things happen when three countries share the same current, in this case the Benguela Current, one of the world’s most important. On land, governments use a plethora of devices – from passports and visas to armed guards and sniffer dogs – to preserve the sanctity of their borders. At sea, everyone forgets to tell the fish, including the pilchards, and other marine animals, where territorial waters and exclusive economic zones begin or end.

This simple fact would seem to dictate the need for co-operation among maritime neighbors. Yet, until recently, countries in this region, as in other parts of the world, treated shared waters as if a Berlin Wall separated their resources from those of their neighbors. Now, however, the three Benguela Current countries – Angola, Namibia and South Africa – are working together to face the challenges and preserve the benefits presented by the Benguela.

Called the Benguela Current Large Marine Ecosystem (BCLME), it is among the four largest of the world’s 50 large marine ecosystems (LMEs) where virtually all ocean fish is caught. It is located along Africa’s southwestern coast. It begins east of the historically and geographically famous Cape of Good Hope and continues northwards to the Angola Front near the northern boundary of Angola.

The BCLME encompasses one of the major coastal upwelling ecosystems of the world – which means there is an abundance of food available on the surface to support what the Transboundary Diagnostic Analysis on the ecosystem calls “an important center of marine biodiversity and marine food production.” This most fertile marine system has a primary production six times higher than that of the North Sea ecosystem.
According to the Transboundary Diagnostic Analysis, prepared with Global Environment Facility (GEF) assistance, “This high level of primary productivity of the BCLME supports an important global reservoir of biodiversity and biomass of zooplankton, fish, sea birds and marine mammals, while near-shore and off-shore sediments hold rich deposits of precious minerals (particularly diamonds), as well as oil and gas reserves.” The document adds that “the natural beauty of the coastal regions, many of which are still pristine by global standards, have also enabled the development of significant tourism in some areas.”

This ecosystem is not only rich; it is also unique. Benguela’s major upwelling center, located near Luderitz in southern Namibia, is “the most concentrated and intense found in any upwelling regime”. The greatest uniqueness of the ecosystem, though, resides in its being bounded by warm water systems both in the north and in the south. In the north, there is the tropical/equatorial Eastern Atlantic. In the south, there is the Agulhas Current of the Indian Ocean which, in earlier times, proved such a challenge to European navigators.

Unfortunately, industrial pollution and poor planning and management of coastal developments and near-shore activities are rapidly degrading vulnerable coastal habitats. Such pollution and the threat of over-fishing not only endanger valuable species, but often favor more undesirable ones.

To get to bottom of the Benguela Current story would take one back a very long time – over ten million of years, by some scientific reckoning. Suffice it to note that indigenous people of Africa’s Atlantic coast had been harvesting inter-tidal and near-shore marine life for centuries before Europeans first explored and settled the area and, by early 17th century, began commercial exploitation of the Benguela. The colonial boundaries, with their disregard for both indigenous practices and natural habitats, meant, as assuredly as different languages were spoken among people of the same tribes, that different systems now applied to the management of the single Benguela ecosystem.

Around 1900, some two centuries after European colonization was introduced, commercial trawling began. The 1960s, 1970s and 1980s were difficult years for the Benguela. Tremendous over-exploitation led to the decimation of a number of fish stocks. In November 1999, when nine Cabinet ministers from the three countries signed a Strategic Action Program for the BCLME outlining their commitment to action, they noted: “The colonial and political past have left a legacy of fragmented management of the BCLME – an absence of co-ordinated planning and integration, poor legal frameworks and a lack of enforcement and implementation of existing regulatory instruments, insufficient public involvement, unbalanced regional capacity development and inadequate financial mechanisms of support.”

In addition to the ravaging of the marine resources and the failure to recognize that the Benguela Current was a single, integrated ecosystem, there has been the failure, even within a single government, to co-ordinate activities relating to the Current. “For example,” according to the Transboundary Diagnostic Analysis, “exploratory wells have
been sunk in established fishing grounds and the well-heads (which stand above the sea bed) subsequently abandoned. Likewise, the impact of habitat alterations due to mining activities and ecosystem alteration (including biodiversity impacts) due to fishing have not been properly assessed.”

The Strategic Action Plan explains the consequences of these errors for the fragile Benguela environment: “These human factors, superimposed on a complex ecosystem which transcends national borders with a highly variable environment, have manifested themselves in declines of fish stocks and some unsustainable practices of harvesting of living resources, uncertainty regarding ecosystem status and yields, increasing pollution, habitat destruction and alteration, loss of biotic integrity and threats to biodiversity, harmful algal blooms, and inadequate capacity to monitor and assess ecosystems. All of these have significant transboundary implications.”

The ecosystem is fragile and, like much of the global ecology, is changing. GEF Senior Adviser Alfred M. Duda notes that while El Nino, for example, is not new, its severity is. With increased global warming, the kind of warming that sent the pilchards scurrying from Angola to Namibia started getting worse in the 1980s and the 1990s. These changes, he says, makes it even more important for countries to co-ordinate their policies on how to adapt to the fluctuating climate. What would happen, for example, if Namibia, faced with this great influx of pilchards, were to harvest them all, without any consideration for the future of Namibia’s fishery and, by extension, that of the other two countries sharing the ecosystem?

A scientific overview of fisheries in the Benguela Current region noted that total catches in the southeast Atlantic had dropped from a peak of 3 million tonnes in 1968 to only about a million tonnes annually during the 1990s. Despite changes in climate and productivity, fisheries remained important to the region. The overview – done by scientists I. Hampton, D C. Boyer, A. J. Penney, A. F. Pereira and M. Sardinha – found that the fisheries sector ranked high in importance as a source of food in Angola and as an export industry, worth $1.35 billion Namibian dollars (about US$225 million), in Namibia. South Africa’s exports rival those of Namibia although of less relative importance to that country’s larger economy. Even here, though, fishery is important as a source of food, revenue and employment in Western Cape Province and other coastal areas.

May/June, 1995 marked a turning point in the way the region looked at the Benguela environment. A seminar on the Benguela laid the foundation both for BENEFIT – BENguela-Environment-Fisheries-Interation and Training – and for the BCLME Program. Both initiatives evidence the commitment of the three countries to co-operate among themselves and with the international community to solve shared problems relating to the Benguela.

BENEFIT, which was adopted by the Southern Africa Development Community (SADC) as a project in June 1996 and formally inaugurated in April 1997 is, in effect, the scientific arm of the Benguela Program. It seeks to “develop the enhanced science
capacity required for the optimal and sustainable utilization of living resources of the Benguela ecosystem by (a) improving knowledge and understanding of the dynamics of important commercial stocks, their environment and linkages between the environmental processes and the stock dynamics, and (b) building appropriate human and material capacity for marine science and technology in the countries bordering the Benguela ecosystem”. Germany and Norway have been the main, and the earliest backers of BENEFIT. However, the body -- which, according to Chief Executive Officer Professor Charles Hocutt, now counts with the “participation of most regional tertiary institutions of higher learning tht border the Benguela” -- has also received support from a range of other donors.

In the first half of 1999 alone, more than 50 persons from SADC countries as a whole were trained during three BENEFIT cruises, including a 40-day survey of resources and the environment between Cape Town, South Africa and Luanda, Angola. The shipboard training, funded mainly by the African Development Bank, was regarded at that time, according to BENEFIT’s newsletter From A to B to Sea, as “beyond any doubt, one of the greatest achievements” of the group.

Where BENEFIT focuses on science and technology and associated capacity development, the BCLME Program deals with the integrated multisectoral management, sustainable development and protection of the Benguela Current Large Marine Ecosystem. Governments are keen not to repeat past errors of over-specialization and ministerial compartmentalization. So, according to the Transboundary Diagnostic Analysis, the Program will focus on a range of key sectors that create stress on the ecosystem. These include fisheries and environmental variability, sea-bed mining, oil and gas exploration and production, coastal zone management, ecosystem health and socio-economics and governance. “Transboundary management issues, environmental protection and capacity strengthening will,” according to the Analysis, “be of primary concern to the BCLME program.”

The GEF, established following the Rio Summit to finance environmental initiatives, is helping to get the Program off the ground. Governments were inspired to seek GEF’s support both by the positive outcome of 1995 workshop/seminar and by steps towards the sustainable development of other LMEs, especially the Black Sea/Danube ecosystem, which had already received considerable GEF funding.

The GEF project, submitted and being implemented by UNDP, requires an investment of $38.9 million, of which GEF is providing $13.9 million. The project will fulfil the three objectives of GEF’s International Waters program. That means it will: assist the countries to better understand the environmental concerns of the Benguela Current ecosystem and work with them to address those concerns; build the capacity of their national and regional institutions to use a more comprehensive approach in addressing transboundary water-related environmental concerns by adopting policy, legal and institutional reforms; and implement sustainable measures that address priority transboundary environmental concerns.
In the case of the Benguela Program, the GEF project will achieve its global and regional objectives by pursuing five short-term objectives. The first is effective co-ordination through the establishment of a Program Co-ordination Unit as a first step towards the creation and functioning of the proposed Interim Benguela Current Commission. Also lead agencies and inter-ministerial committees in each country will be identified and provided with needed resources.

Secondly, the management capacity will be put in place to ensure that the resources of the ecosystem are better sustained and utilized. This will require, among other things, the development of plans, concrete actions and time-tables for optimal resource utilization. The impacts of mining and drilling on the ecosystem will be assessed and policies developed to minimize those impacts. Attention will also be paid to measures for the responsible development of mariculture and the protection of vulnerable species. The project will also support the countries’ efforts to understand the relationship between those species which are harvested and those which are not, and what role the latter can play in improved “stock management practices” and in conserving biological diversity.

Thirdly, the project will help the countries to take a good look at all those changes taking place in the Benguela Current ecosystem and at the impact of those changes. And, in one of the tougher tasks undertaken by the Program, the resulting information will be used to improve the countries’ ability to predict ecosystem changes with a view to strengthening the management of fish stocks.

Dr. George T. Needler of the Bedford Institute of Oceanography undertook a scientific review of the project and described it as “difficult and ambitious” but “balanced and rational”. He cautioned, however, that “prediction of seasonal and inter-annual shifts will remain difficult in the foreseeable future.” Alfred Duda and others involved in designing the project believe that with the sound science and knowledge that would be available to the three countries, they could at least take preventive steps to reduce over-fishing so that, even if a climatic calamity occurred, there would be fish stock of a sufficient size to permit regeneration.

Even as the countries grapple with the establishment of new regional institutions and with acquiring a new understanding of the Benguela Current ecosystem, they will “undertake preliminary steps to maintain BCLME ecosystem health and effectively manage pollution as a means to safeguard fishery resources”. Activities here will include measures to help prevent major oil spills, address deteriorating coastal water quality and turn back the clock on the destruction or alteration of the places in and near the sea where animals and plants call home.

Finally, the project will leverage GEF’s investments by supporting the countries in their efforts to recruit additional donors and increase the level of “co-financing” during project implementation. UNDP plans to team up with the World Bank to organize a donors’ conference to mobilize support for the BCLME Program during the first year of project implementation. Apart from Germany and Norway, a number of bilateral donors –
Denmark, Ireland, Iceland and the United Kingdom – as well as the European Union have already supported activities related to the BCLME.

While no one can predict with certainty the success of any development undertaking, this GEF project is unique in that it is beginning to break records before it even gets fully off the ground. According to a note by GEF’s Alfred Duda and Christophe Crepin of the World Bank, no other GEF project of its type had been able to complete a transboundary diagnostic analysis and a program for strategic action “during project preparation or so quickly”. Whereas in other regions, a major GEF project was struck to facilitate such preparation, this project is able to focus on implementation of the principles outlined in the analysis and the commitments contained in the action program.

“Next to the Danube, this is the most complete package of successfully accomplished strategic work as called for by the GEF Operational Strategy,” according to the note prepared after a trip to the region. The sound scientific work undertaken by BENEFIT and the strong links between this body and the wider BCLME Program have been credited for this achievement. The two officials see the fact that ministers from several sectors in the three countries had signed the action program as “evidence that a shared political commitment, some might say a shared vision, has been achieved that minimizes risk for the full project”.

The vision is already reaching beyond this southwestern corner of Africa and beginning to envelop the entire continent. All coastal African countries have already requested GEF assistance under GEF’s international waters focal area. GEF already has projects approved for three of Africa’s seven LMEs. Projects for the other four are under consideration. In addition, projects are being prepared, with the help of GEF funding, for 10 African shared river basins. These projects are expected to benefit from the Benguela experience.

In this regard, these words from the Transboundary Diagnostic Analysis may be worth pondering: “The BCLME Program, which builds on existing regional capacity and goodwill, could serve as a blueprint for the design and implementation of LME initiatives in other upwelling regions and elsewhere in the developing world. Moreover, the BCLME Program will address key regional environmental variability issues that are expected to make a major contribution towards understanding global fluctuations in the marine environment, including climate change.” In other words even if Benguela is ecologically Africa’s El Nino, it could, in political terms, prove to be the continent’s sea of good hope.