



Socio-economic benefits of Large Marine Ecosystem valuation: The case of the Benguela Current Large Marine Ecosystem



U. Rashid Sumaila

Fisheries Economics Research Unit, Global Fisheries Cluster, Institute for the Oceans and Fisheries, the University of British Columbia, 2202 Main Mall, Vancouver, BC, V6T 1Z4, Canada

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ABSTRACT

The Benguela Current Large Marine Ecosystem (BCLME) is one of the 66 identified Large Marine Ecosystems of the world. The countries of the BCLME region, i.e., Angola, Namibia and South Africa, benefit from many goods and services derived from the BCLME. Coastal and marine ecosystem goods and services play a crucial role in supporting the livelihoods of the people and national economies that use this ecosystem. I compiled and analyzed data on fisheries benefits, economic gains from marine recreational activities and benefits from mariculture taking place in the BCLME. Results indicate that a total of approximately 966,000 t of fish were landed from the BCLME in 2006, contributing over half a billion US dollars of direct economic impact and almost US\$2.2 billion in total economic impact. These three marine ecosystem services support about 75,000 jobs.

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1. Introduction

The lack of widespread valuation of Large Marine Ecosystems (LMEs) and the goods and services they contain can lead to distorted incentives and unsustainable practices, as the full range of costs and benefits associated with the use of the resources are misunderstood resulting in ill-advised policies (e.g., the provision of capacity enhancing fishing subsidies). The lack of comprehensive valuation of LME results in the lack of realization of the risks involved as humans interact with the marine ecosystem (what are the risks to the livelihoods of people dependent on marine ecosystems due to pollution, for e.g.). It also results in the lack of information to make decisions about trade-offs between different LME goods and services (for e.g., should we preserve marine life for recreational purposes or should we use them as food?)

Taking a valuation approach that is broad and comprehensive is therefore important for understanding the full impact and trade-offs associated with marine resource use. Being comprehensive is necessary to avoid what Benjamin Franklin was alluding to in the following quote “I believe that the great part of miseries of mankind is brought upon them by false estimates they have made of the value of things.” (Benjamin Franklin, 1706–1790¹).

Large marine ecosystems contain various fisheries resources that are typically shared by multiple countries. This brings up the challenge of how best to manage LME resources given the competing interests of individual LME countries. In many cases, a major driver of fisheries overexploitation is individuals' desire to maximize private returns from the resource (Munro, 1979; Clark, 1990). This leads to short-sighted, non-cooperative behavior which can result in economic, environmental and biodiversity losses and wastage to society in the long term (Clark, 1973; Sumaila and Walters, 2005).

E-mail address: r.sumaila@fisheries.ubc.ca

¹ See <http://www.brainyquote.com/quotes/quotes/b/benjaminfr133898.html> for quote [date accessed: September 20, 2015].

Circumventing this type of competitive behavior among LME countries can be accomplished by organizations such as the Benguela Current Commission (BCC), which provides a platform for representing the joint interests of the Benguela Current LME countries of Angola, Namibia and South Africa. For the BCC and other multinational management organizations, finding an approach which captures the diverse socio-economic benefits derived from marine ecosystems is essential for addressing the multiple interests driving the exploitation of fisheries and other marine resources.

In the next section, I present the results of a recent study conducted for the Benguela Current Commission on the valuation of goods and services derived from the Benguela Current.

2. Economic valuation of the marine and coastal resources of the Benguela Current LME²

The Benguela Current Large Marine Ecosystem (BCLME) is one of the 66 identified Large Marine Ecosystems of the world (Sherman, 2014). The countries of the BCLME region, i.e., Angola, Namibia and South Africa, benefit from the goods and services supported by the BCLME. Coastal and marine ecosystem goods and services play a crucial role in supporting the livelihoods of the people and national economies that use this ecosystem. Yet, Hassan et al. (2005) reports that marine ecosystems around the world are deteriorating, and with them the capacity to support human well-being. More recent studies have highlighted the deteriorating state of world oceans and the living resources they support (e.g. Halpern et al., 2012).

Joint management of the BCLME is advanced, with a Benguela Current Commission established to help improve the joint, sustainable, high-level political management of the ecosystem. This valuation study aims to build further political will to undertake threat abatement activities while leveraging finances proportionate to management and governance needs. Here, I provide a broad overview of the economic contribution of the BCLME to Angola, Namibia and South Africa, focusing on fishing, mariculture and marine recreational activities. For these, I measure the incomes and other benefits generated and discuss the need for transboundary management of the resources of the BCLME.

Specifically, I provide a broad overview of the total economic value of the BCLME and the resources it supports, and their contribution to the economy; using the economic results, provide local resource managers with indicators about the economic impact of different economic sectors using the BCLME (e.g., fish farming and marine recreational activities).

2.1. The Benguela Current Large Marine Ecosystem (BCLME)

The BCLME can be loosely considered as covering the continental shelf between the Angola–Benguela frontal zone in Southern Angola and the Agulhas retroflection area, typically between 36 and 37 degrees South (Shannon and O’Toole, 1998). It therefore covers the west coast of South Africa, the entire Namibian coast, and Southern Angola depending on the position of the Angola–Benguela front, which moves seasonally between 14 and 17 degrees South (Shannon and O’Toole, 1998). The BCLME is one of the world’s major, productive eastern-boundary currents. It is rich in both pelagic and demersal fish populations, supported by plankton production driven by intense coastal upwelling (see Boyer and Hampton, 2001).

2.2. Theoretical framework for economic valuation

The economic theory of valuation of natural and environmental resources calls for a comprehensive compilation of all values into a total economic value (Krutilla, 1967; Goulder and Kennedy, 1997; Berman and Sumaila, 2006). The theory stipulates that the total economic value (TEV) should include use and non-use values, that is, (i) direct use value, (ii) indirect use value, (iii) option value, (iv) existence value, and (v) bequest value. Direct use values may be generated through the consumptive or non-consumptive use of marine resources. Some ecosystem goods and services are directly used for consumptive purposes, in which case the quantity of the good to other users is reduced. On the other hand, other goods and services are non-consumptive (e.g., whale watching), implying that their use does not result in a reduction in the quantity of the goods or services available. These are known as non-rival, non-excludable goods and services.

In this study, I focus on the valuation of fisheries (commercial, subsistence, artisanal fisheries, marine recreational activities and mariculture) in each of the three BCLME countries. The aim is to provide one piece of the many building blocks needed to carry out a more comprehensive analysis of the benefits derived from the BCLME by Angola, Namibia and South Africa. To compute each of the above indicators for the three countries of the BCLME, I carried out an extensive literature and internet search for information.

2.3. Values from fisheries

The fisheries sector is very important in Angola, being the third-most important industry after oil and diamond mining. It provides nearly half of the animal protein of the country, and is an important source of employment and food to populations of the coastal regions, where it is often the only source of livelihood for poorer population groups. Domestic consumption of

² Note that this section draws heavily from a preliminary report prepared for the Benguela Current Commission.

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