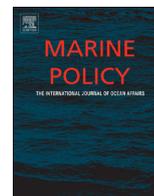




ELSEVIER

Contents lists available at ScienceDirect

## Marine Policy

journal homepage: [www.elsevier.com/locate/marpol](http://www.elsevier.com/locate/marpol)

## Cost-benefit analysis in the context of the EU Marine Strategy Framework Directive: The case of Germany



Christine Bertram<sup>a,\*</sup>, Thomas Dworak<sup>b</sup>, Stefan Görlitz<sup>c</sup>,  
Eduard Interwies<sup>c</sup>, Katrin Rehdanz<sup>a,d</sup>

<sup>a</sup> Kiel Institute for the World Economy, Hindenburgufer 66, 24105 Kiel, Germany

<sup>b</sup> Fresh-Thoughts Consulting GmbH, Auhofstrasse 4/7, 1130 Vienna, Austria

<sup>c</sup> InterSus-Sustainability Services, Chodowieckistr. 2, 10405 Berlin, Germany

<sup>d</sup> University of Kiel, Department of Economics, Olshausenstr. 40, 24098 Kiel, Germany

### ARTICLE INFO

#### Article history:

Received 25 March 2013

Received in revised form

28 June 2013

Accepted 28 June 2013

Available online 6 August 2013

#### Keywords:

Marine Strategy Framework Directive (MSFD)

Cost-Benefit Analysis (CBA)

Environmental valuation

Germany

### ABSTRACT

The Marine Strategy Framework Directive (MSFD) requires EU member states (MS) to develop and implement marine strategies containing programs of measures to protect and preserve the marine environment. Prior to their implementation, impact assessments, including Cost-Benefit-Analyses (CBA), need to be carried out. While the costs of introducing such measures are often relatively easy to determine, the economic valuation of the benefits derived from environmental improvements is much more challenging, particularly in the marine context. Still, it remains an important prerequisite for conducting CBA. The aim of this paper is to evaluate to what extent benefits can be quantified for use in CBA focusing on the German marine waters. The results indicate that there are still considerable gaps in the scientific knowledge about many of the pressures mentioned in the MSFD. Moreover, few economic studies exist that evaluate the benefits of marine protection measures, and many of them are not applicable in the German context. In addition, there is the risk that some benefits accruing from marine protection measures are systematically omitted in CBA. This raises the question to what extent comprehensive CBAs as required by the MSFD are possible in Germany, but also in other EU MS.

© 2013 Elsevier Ltd. All rights reserved.

### 1. Introduction

The European marine and coastal waters, including the wider North and Baltic Seas, belong to the most intensively used marine regions of the world. Humans use these waters in a number of ways and with increasing intensity, e.g. for fishing or shipping and also for recreational purposes. At the same time, these uses—and other anthropogenic influences—exert pressure on the marine environment, e.g. via increased nutrient input, litter deposition or contamination with toxic substances (for a recent overview of the literature see [1]).

In June 2008, the EU Marine Strategy Framework Directive (MSFD)<sup>1</sup> was published. The directive obliges EU Member States (MS) to achieve or maintain a “Good Environmental Status” (GES) in their marine environments by 2020 at the latest. This directive establishes a framework for community action in the field of

marine environmental policy, expanding the EU Water Policy to encompass all European waters. At the same time, the MSFD represents the environmental pillar of the integrated EU maritime policy (“Blue book”), which seeks to provide a more coherent approach to maritime issues with increased coordination between different policy areas.

For the purpose of achieving or maintaining a GES, marine strategies containing programs of measures shall be developed and implemented in order to protect and preserve the marine environment, prevent its deterioration or, where practicable, restore marine ecosystems in areas where they have been adversely affected. Prior to implementing such measures, however, the MSFD requires the MS to conduct Impact Assessments, including Cost-Benefit Analyses (CBA). While the costs of introducing such measures are often relatively easy to determine, the economic valuation of the benefits derived from environmental improvements is much more challenging, particularly in the marine context. Still, it remains an important prerequisite for conducting CBA. Theoretical concepts for conducting economic benefit evaluations exist in abundance. The lack of quantifiable data, however, results in the necessity of combining quantitative and qualitative information (e.g. through multi-criteria analyses) or carrying out benefit transfers.

\* Corresponding author. Tel.: +49 431 8814 261; fax: +49 431 8814 500.

E-mail addresses: [thomas.dworak@fresh-thoughts.eu](mailto:thomas.dworak@fresh-thoughts.eu) (T. Dworak), [goerlitz@intersus.eu](mailto:goerlitz@intersus.eu) (S. Görlitz), [interwies@intersus.eu](mailto:interwies@intersus.eu) (E. Interwies), [katrin.rehdanz@ifw-kiel.de](mailto:katrin.rehdanz@ifw-kiel.de) (K. Rehdanz).

<sup>1</sup> Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 [2].

In this context, the German Federal Environment Agency (UBA) initiated the project “Methodologies regarding Economic and Social Analyses and Impact Assessments of Measures Including Cost-Benefit Analyses in the context of the Marine Strategy Framework Directive”.<sup>2</sup> The aim of this project was to compile and evaluate existing information about the economic benefits associated with marine protection measures and to develop a methodology to quantify these benefits for use in CBA in a practical and understandable way. The results indicate that there are still considerable gaps in the scientific knowledge about many of the pressures mentioned in the MSFD. Moreover, few economic studies exist that evaluate the benefits of marine protection measures, and many of them are not applicable in the German context. In addition, there is the risk that some benefits accruing from marine protection measures are systematically omitted in CBA. This raises the question to what extent comprehensive CBAs as required by the MSFD are possible in Germany, but also in other EU MS.

This paper highlights the background and main components of the MSFD with regard to the economic analyses required and sketches the main results of the above mentioned project, including experiences derived from two practical case studies. The paper further points out limitations arising from the lack of reliable data and provides recommendations for closing knowledge gaps related to the valuation of benefits of marine protection measures for CBA in the context of the MSFD.

## 2. Background and economic requirements of the MSFD

### 2.1. Marine strategies

The MSFD requires EU MS to develop strategies for their marine waters (Art. 5.1 MSFD) in order to preserve or restore marine ecosystems and prevent their deterioration (Art. 1.2(a) MSFD). These marine strategies shall apply an ecosystem-based approach to the management of human activities affecting the marine environment and ensure a sustainable use of marine goods and services by present and future generations (Art. 1.3 MSFD).<sup>3</sup>

To ensure coordinated approaches to determining the marine strategies across MS, the MSFD defines the steps they have to include. According to Art. 5.2(a–b) MSFD, marine strategies need to include an initial assessment of the current environmental status of the marine waters and the environmental impact of human activities thereon as well as a description of the GES, including the selection of a series of environmental targets and associated indicators. In addition, a monitoring program for the ongoing assessment and regular updating of targets needs to be established and a program of measures designed to achieve GES has to be developed and implemented. Fig. 1 presents an overview of the timeline of the implementation of these steps.

### 2.2. Co-operation

To take account of the transboundary nature of marine waters, the MSFD defines marine regions and sub-regions according to geographical and ecological criteria. MS sharing a marine region or sub-region shall cooperate in developing their national marine strategies to ensure coherence (Art. 5.2 MSFD). The MSFD also requires MS to take into account transboundary effects of measures in the same marine region or sub-region (Art. 2.1; also Art. 8.3(b), 14.1(d), 13.8).<sup>4</sup>

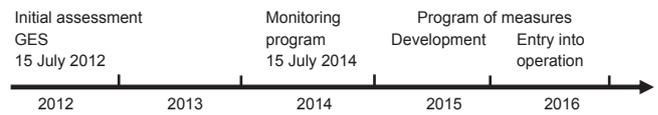


Fig. 1. Timeline of the implementation of the MSFD. Own presentation. Source: Art. 5.2(a,b) MSFD.

### 2.3. Key economic requirements

The MSFD explicitly requires MSs to take into account social and economic aspects when preparing and implementing their marine strategies. The four key economic requirements of the MSFD are presented in the following:<sup>5</sup>

- Initial Assessment of a MS's marine waters, including an “Economic and Social Analysis” (ESA) of the use of those waters, and of the cost of degradation of the marine environment (Art. 8.1(c) MSFD)
- Establishment of environmental targets and associated indicators describing GES, including due consideration of social and economic concerns (Art. 10.1 in connection with Annex IV, no. 9 MSFD)
- Identification and analysis of measures needed to be taken to achieve or maintain GES, ensuring cost-effectiveness of measures and assessing the social and economic impacts including cost-benefit analysis (Art. 13.3 MSFD)
- Justification of exceptions to implement measures to reach GES based on disproportionate costs of measures taking into account the risks to the marine environment (Art. 14.4 MSFD)

Economic considerations are thus central for developing the marine strategies required by the MSFD. For example, CBA have to be carried out before implementing any new measure to reach GES. Moreover, economic considerations related to costs and benefits of marine protection measures are likely to play a major role for justifying exceptions from the requirement to reach the targets.

The following sections of this paper analyze which problems policy makers may face when conducting CBA due to the difficulties related to valuing benefits in the marine context, and provide related recommendations derived in the above-mentioned project. To this end, we first give a short overview of the approach taken in the project.

## 3. Approaches to valuing benefits of marine protection measures in the German coastal waters

### 3.1. Background and objective of the project

Before the project started (duration from December 2010 to August 2012), there had been no clear picture of how much and which kind of information already existed regarding the valuation of social and economic benefits of marine protection measures in the German context. The project was therefore designed as a first attempt to close this knowledge gap, to demonstrate the current possibilities (and limitations) of economic benefit evaluation in

(footnote continued)

concerning the Economic and Social Assessment (in the North-East Atlantic). The ultimate aim of the project is to harmonize these approaches on a regional sea level, to ensure coherence according to the MSFD (<http://www.eftec.co.uk/eftec-projects/ospar-region-msfd-economic-and-social-analysis-approach>).

<sup>5</sup> See COWI [4] for a more detailed review of the economic requirements of the MSFD.

<sup>2</sup> In the following, this project will be referred to as “the project”.

<sup>3</sup> The presentation in this section is based on [3].

<sup>4</sup> To gain insight into the regional differences and similarities, the OSPAR Commission started a research project to examine the approaches taken by MS

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات