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Ten years of economic analyses for the European Marine Strategy Framework Directive: Overview of experiences and lessons learned

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Ten years of economic analyses for the European Marine Strategy Framework Directive: Overview of experiences and lessons learned

Acknowledgments

This paper presented the results and experiences of 10 years of work by the European Working Group on (Programs Of Measures and) Economic and Social Analyses. Although the authors have been actively involved in this working group over the past years, they were not the sole contributors to this working group. On this place we therefore thank the other (past and present) members of the working group for their active involvement in the group, without which this group would not have been so successful, and we would like to thank them also for their comments and suggestions on earlier drafts of this paper.

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1. Introduction

“The marine environment is a precious heritage that must be protected, preserved and, where practicable, restored with the ultimate aim of maintaining biodiversity and providing diverse and dynamic oceans and seas which are clean, healthy and productive” according to the third preamble to the European Marine Strategy Framework Directive (MSFD), which came into force in 2008 (European Parliament, 2008). According to Article 1, the European Marine Strategy Framework Directive establishes a framework within which Member States shall take the necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest. For that purpose, marine strategies shall be developed and implemented in order to: (a) protect and preserve the marine environment, prevent its deterioration or, where practicable, restore marine ecosystems in areas where they have been adversely affected; (b) prevent and reduce inputs in the marine environment, with a view to phasing out pollution, so as to ensure that there are no significant impacts on or risks to marine biodiversity, marine ecosystems, human health or legitimate uses of the sea. These marine strategies shall apply an ecosystem-based approach to the management of human activities, ensuring that the collective pressure of such activities is kept within levels compatible with the achievement of good environmental status and that the capacity of marine ecosystems to respond to human-induced changes is not compromised, while enabling the sustainable use of marine goods and services by present and future generations. This Directive shall contribute to coherence between, and aim to ensure the integration of environmental concerns into, the different policies, agreements and legislative measures which have an impact on the marine environment.

The main obligations are thus on the Member States. They have to draw up marine strategies, and they have to do so in a particular way, which includes:

- an initial assessment of the current environmental status of the waters concerned and the environmental impact of human activities thereon (Article 8),
- a determination of good environmental status for the waters concerned (Article 9),
- establishing environmental targets (Article 10),
- a monitoring programme for ongoing assessment and regular updating of targets (Article 11), and

- the development of a program of measures designed to achieve or maintain good environmental status (Article 13).

These actions have to be carried out by each Member State on a specific time schedule and repeated in a 6-year cycle.

However, Member States are not alone in pursuing these activities, in view of the cross-border nature of many challenges that are facing them in the marine environment. Article 6 therefore stipulates regional cooperation using existing regional institutional cooperation structures, including those under the Regional Sea Conventions. In preparing the assessment according to Article 8, Member States have to make every effort to ensure that assessment methodologies are consistent across the marine region or subregion concerned, and that transboundary impacts and transboundary features are taken into account.

In addition, there is an EU-level aspect to the implementation of the directive in order to achieve a consistent approach across the Member States. Thus, the criteria and methodological standards to be used in determining good environmental status according to Article 9 are determined by EU implementing legislation that has been developed by the Commission assisted by a Committee, guided by the definition of 11 descriptors of GES in Annex I of the directive and lists of characteristics, pressures and impacts in Annex III. Finally, the Member States have to notify the European Commission of their activities.

One of the responsibilities of the Member States (MS) is to perform various types of economic analyses. In order to help Member States to implement the MSFD, the European working group on Economic and Social Analysis (WG ESA) was initiated in 2009, when it had its first meeting. The group was renamed in 2016 after 14 meetings as the Working Group on Program of Measures for Economic and Social Analysis (WG POMESA). This working group is part of the MSFD Common Implementation Strategy (CIS), an informal programme of coordination, where the European Commission and MS jointly support MS in implementing the MSFD by sharing knowledge and experiences and helping with the reporting to the Commission (see for example European Commission (2016) for the most recent Terms of Reference). This Common Implementation Strategy is coordinated by an expert group called the Marine Strategy Coordination Group (MSCG). There are three working groups reporting to this group, with the WG POMESA being one of them (See Figure 1). The authors of the present paper are all members of this working group.

Over the past ten years, WG (POM)ESA has been discussing the various requirements for economic assessment in different articles of the MSFD (European Parliament, 2008):

- Article 8 on the initial assessment of marine waters requires "an economic and social analysis of the use of those waters and of the cost of degradation of the marine environment."



Figure 1. Composition of the Common Implementation Strategy (European Commission, 2017).

- Article 10 on the establishment of environmental targets does not directly refer to economic assessment. However, it stipulates that the environmental targets and associated indicators shall take into account, inter alia, "due consideration of social and economic concerns in the setting of targets"
- Article 13 on the program of measures (PoMs) states that when drawing up the PoMs, MS shall give due consideration to sustainable development and, in particular, to the social and economic impacts of the measures envisaged. In addition, they shall ensure that measures are cost-effective and technically feasible, and they shall carry out impact

assessments, including cost-benefit analyses (CBA), prior to the introduction of any new measure.

- Article 14 on exceptions provides that MS do not have to take specific steps, inter alia, "where the costs would be disproportionate taking account of the risks to the marine environment, and provided that there is no further deterioration"

Various studies have been published that focused on certain elements of the economic analyses for the MSFD. As a starting point and an input to the initial discussion within the MSFD CIS a scoping study on understanding the requirements for economic assessment in the MSFD was commissioned (European Commission, 2010). The study identified the explicit and implicit requirements of the MSFD for economic analyses and possible analytical and methodological approaches for the analyses. Similarly Turner et al. (2010), introduce socio-economic methods and techniques for the marine protection and sustainable use to support the work in the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR). Bertram and Rehdanz (2013) and Bertram et al. (2014) were among the first peer-reviewed articles and focused on the CBA of the MSFD PoM of which later case-studies is given by (Börger et al., 2016). Tools and applications for the cost-effectiveness analysis of the MSFD PoMs are developed by Kontogianni et al. (2015) and (Oinonen et al., 2016). The latter paper also presents some recommendations for the theoretically sound and practically useful conduction of economic analyses for the MSFD. Hanley et al. (2015) considers whether economic valuation is fit for purpose to produce policy relevant estimates of the benefits in marine ecosystems. Levrel et al. (2014) apply maintenance costs approach to assess the cost of degradation.

Some of this literature have been conducted in various EU projects to support the implementation of the MSFD. They can be found e.g. from the Marine Knowledge Gate (<http://kg.eurocean.org/>). The search tool allows filtering of the project by marine region and by Good Environmental Status (GES) descriptor. However, filtering according to economic analyses requested by the MSFD is not possible. In addition, regional seas conventions perform economic analyses for the MSFD. For example, the work in OSPAR with respect to [the economic aspects of the OSPAR initial assessment 2017](#) focuses on a more coherent presentation of the economic analyses by using the same set of data and indicators, and in HELCOM the current [TAPAS](#) project supports the Holistic Assessment of the Ecosystem Health of the Baltic (HOLAS) by developing a common conceptual framework for economic and social analyses

in the Baltic Sea. Finally, [Plan Bleu](#) has published a study that aims at providing information on socio-economic characteristics such as effectiveness, costs and benefits of measures to achieve the Good Environmental Status (GES) of the Mediterranean Sea and coast.

The primary focus of the representatives of the various Member States involved in the WG POMESA is to perform socioeconomic analyses that can be used to provide useful information to their parliaments and can be used to report to the European Commission. This work is therefore usually not published in scientific journals. As a result, outside of the WG POMESA, not much is known about the practical guidance documents that have been developed at the European level by this working group, even though these documents have been very useful in helping to understand the Directive and its requirements, to develop one language, understand the pros and cons of various approaches, and to share experiences. This paper is meant to bridge that gap, by opening the doors and presenting what has been done in that European Working Group over the past ten years. By doing this, we hope to shed light on the pragmatic requirements of the economic analyses in a policy context and to pave the way for a dialogue between interdisciplinary research projects and the policy advisors.

This paper starts by presenting the key elements of the Working Group for Economic and Social Analysis guidance document, which focuses on the requirements for the initial assessment, followed by a description of the Program of Measures recommendation document, which focuses on the requirements for the PoM. After that, some shared experiences are presented. The paper ends with some suggestions about how the added value of the work done by the scientific community for policy making could be improved, and an overview of some future challenges where economic policy advisors could use some help from the scientific community to improve their analyses and/or the health of the marine environment.

2. Elements of the Working Group Environmental and Social Analysis Guidance Document

As stated above, Article 8 of the MSFD requires “an economic and social analysis of the use of those waters and of the cost of degradation of the marine environment”. Within the WG POMESA Member States, the European Commission and Regional Sea Conventions discussed and agreed on a non-legally binding document that presents the technical interpretation common

understanding of this Article. (European Commission, Directorate-General Environment. 2010)

Three definitions on key concepts form the essential background for further work by Member States on MSFD. First, the socio-economic analysis aims at identifying the impact on human welfare of a given policy. This includes economic as well as social aspects and may include the distribution of these impacts across stakeholders. Therefore, an explicit distinction between “economic” and “social” analysis is not necessary under the MSFD. The use of marine waters is defined as any human activity using or influencing the marine space and/or ecosystem goods and services provided by marine waters. And finally, the cost of degradation is the welfare forgone, reflecting the reduction in the value of the ecosystem services provided compared to another state. An additional key concept is the baseline or “Business as Usual” scenario (BAU), described as the anticipated evolution in the environmental, social, economic and legislative situation in a marine environment over a certain time horizon if the MSFD is not implemented. Therefore, the BAU scenario does not include the Program of Measures implementation (Art. 13) but considers the implementation of any other sectorial policies and regulations.

For the economic and social analysis of the use of marine waters two main approaches were described, but others can be adopted by Member States, including a combination of both:

1. The ecosystem services approach calculates the value of welfare derived from ecosystem services using different approaches. Benefits, rather than services per se, are valued considering both use and non-use values and final services.
2. The Marine water accounts approach has a firm base in the internationally established structure of the System of National Accounts. This ensures that data and related indicators are internationally comparable.

An indicative list of economic sectors and potential indicators (such as value added, production value, income and employment) is provided in the Guidance Document.

With respect to the analysis of the cost of degradation, the Guidance Document proposes three different approaches, but also here, Member States are not compelled to follow them, and any other methodology can be adopted.

The three methods presented in the Guidance document are:

1. The *ecosystem service approach*, which describes, in quantitative or qualitative terms, the consequences to the human welfare that result from the difference between the Good Environmental Status and the environmental status in the BAU scenario. This difference is described in terms of the parameters describing the GES and not in terms of human welfare. But what is relevant following this approach is to describe this difference in terms of ecosystem services that are by definition “the benefits people obtain from ecosystems” (Millennium Ecosystem Assessment, 2005).
2. The *cost-based approach* uses the assumption that current costs for measures to prevent environmental degradation would only have been taken if the value of what is obtained (prevented degradation) is higher than the cost of the measures. According to this method, the current costs are a proxy of the lower bound value for the cost of degradation or, in other words, it is the minimum amount we are willing to pay to prevent degradation. This gives an idea of the present structure of the distribution of the costs of the measures in place to protect the marine environment. This is a valuable information when performing a distributional analysis of the costs of additional MSFD measures.
3. The *thematic approach* has elements of both approaches, but considers degradation themes, such as marine litter.

The working group has recently updated this guidance document, and checked whether any changes were needed because of the EU Commission Decision on ‘good environmental status’ of marine waters (adopted on 17 May 2017), which contains a number of criteria and methodological standards for determining good environmental status, in relation to the 11 descriptors of good environmental status laid down in Annex I of the MSFD (European Commission, 2017). The update resulted in some minor adjustments, mainly related to making the document useful for more than only the first round of analyses, but no significant changes resulted due to the Commission Decision.

3. The Program of Measures Recommendations Document

Article 13 of the Program of Measures (PoMs) requires Member States to carry out impact assessments, including CBA, prior to the introduction of any new measure. In order to help MS to develop and report on their PoM, and to allow a coherent and harmonious implementation of the directive, in 2014 the PoM recommendations document was developed by a group of experts from WG POMESA and following consultation of the Working Group on Good Environmental Status. (European Commission, Directorate-General Environment. 2014)

Important elements of this document are:

- A clear overview of the requirements of what the PoM should contain. This provided a good starting point for planning the implementation of the PoM and a better understanding of the process of developing new measures and how this should be documented, and the analyses required. This saved valuable time.
- The document also provides a clear definition of how the terms “existing” (art 13.2) and “new” measures (art 13.3) should be interpreted. For this, a categorization of four types of measures was developed (see also Table 1). This typology has contributed to a clearer understanding of how other countries might have interpreted different types of measures, which improves the chances of a harmonious implementation of the directive. Especially since only Type 2b measures are considered as "new" in the sense of Article 13(3), they are the only ones for which a CBA is required.

Measure	Description	a	b
1	Existing measures	1a - Under other policies - Already implemented	1b - Under other policies - Not yet implemented
2	Additional measures	2a - Under other policies, but beyond existing ones	2b - Germane to MSFD

Table 1. Classification Of Measures For The Purpose Of Economic Analysis (European Commission, Directorate-General Environment, 2014).

- The document also makes clear the types of economic analysis that are required and when. Even though it does not present in-depth descriptions

on how to perform the analyses, it does give directions, in that it highlights the difficulties to find sufficient data, and the need for experts to find alternative methods, such as multi criteria analysis. In that way the experts are given a better understanding of the need to find alternative solutions to tackle the challenges presented while still providing valuable information for decision-makers. Each MS would probably acquire that understanding when performing the economic and social analysis, but this document made it possible to start higher up on the learning curve, saving time and resources.

- The document also provided a degree of freedom in stating that for some of the aspects in the PoM MS were encouraged to choose either Cost-Benefit Analysis or Cost Effectiveness Analysis depending on the most appropriate decision making processes in MS. This meant that experts could choose the method that would be likely to present the best support for decision makers and could produce the most valuable result given the lack of sufficient supporting information.

4. Summary of Experiences

One of the key aspects of the Common Implementation Strategy is the informal exchange of knowledge and experiences in an attempt to help responsible parties in Member States to implement European Directives, such as the Marine Strategy Framework Directive. WG POMESA has done this over the past years not only by drafting the guidance documents, but also by presenting work in progress, and by collecting and sharing experiences. For the latter, the use of questionnaires appeared to be an effective and efficient way. Even though most economists of the various MS are very busy, and therefore do not have very much time, in general they are more than willing to provide answers and share their experiences, especially when they are asked very focused questions. This section summarizes the results of three of those questionnaires that have been performed over the past years.

The first questionnaire, conducted by Sweden in 2011 (Kock et al, 2011a), focused on the methods used by the various MS for the economic analyses for the Initial Assessment. This questionnaire showed that for the economic analysis of the use of marine waters, the majority of the MS used the marine Water accounts approach and three MS used the ecosystem services approach. Figure 2, taken from a presentation on this questionnaire (Kock et al, 2011b), gives a little more detail on this analysis by providing an overview of the number of MS that have included certain sectors in their analyses. For the analysis of the cost of degradation a much wider variety of approaches was used

(see Table 2). With respect to the development of a “Business as Usual” scenario, the methods used and the features described appeared to differ to a large extent.

Approach	Member State
Ecosystem services approach	Denmark, United Kingdom
Cost-based approach	Netherland, Spain, France
Thematic approach	Germany, Belgium
Mix of approaches	Sweden, Estonia
Others	Slovenia, Finland, Malta

Table 2. Various Approaches Used by Member States For The Analysis Of The Cost Of Degradation (Kock et al, 2011).

The second questionnaire, distributed in early 2013 by Van der Veeren et al (2013), after the Initial Assessments were finalized, focused on the lessons learned, encompassing not only potential information gaps, and an evaluation of the usefulness of the WG ESA guidance document for the Initial Assessment, but also looked at potential room for improvement in the relevant processes:

- MS consider WG POMESA to be an important platform to exchange information, ideas and experiences, and found the guidance document very useful, since it offered different approaches from which to choose. This allowed the MS to choose those analyses that suited the needs and information availability in the respective countries.
- The most important challenge reported was a general lack of necessary data, especially with respect to quantitative information on the link between pressures and impacts. Also the limited capacity to perform the required economic analyses, the international cooperation with non EU countries who are not required to perform the various analyses, and the unclear and ever changing reporting requirements, created significant challenges for some.
- With respect to future work, most MS wanted to continue to work together in WG POMESA in the same informal way, and exchange

information and experiences on upcoming analyses, such as the CEA and CBA for the PoM.

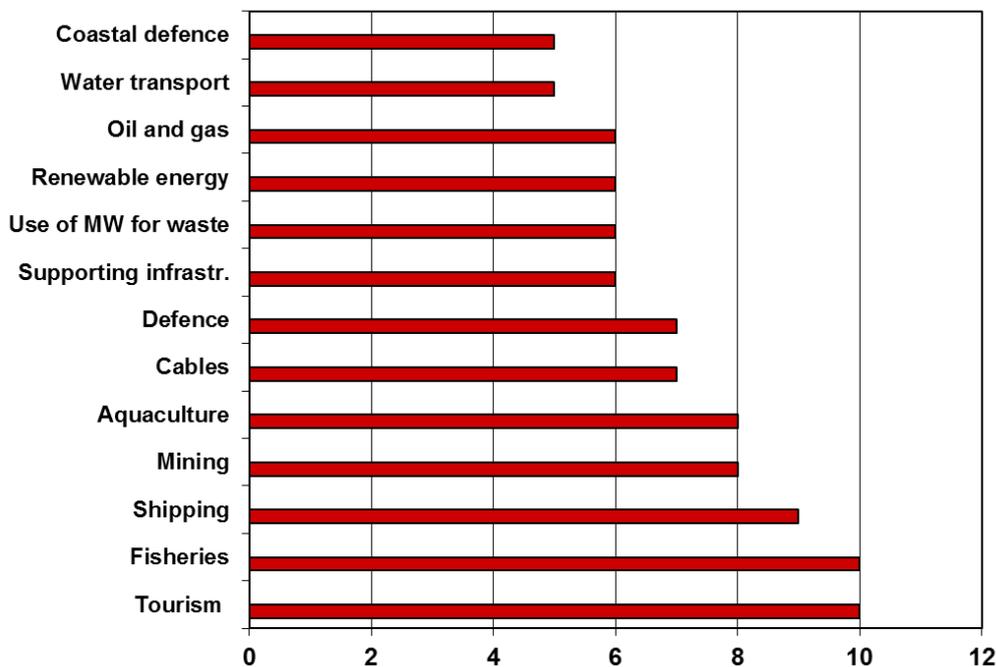


Figure 2. Number of Member States that presented economic data on particular sectors in their analyses (Kock et al, 2011).

The third questionnaire, distributed in early 2015 by Van der Veeren and Keijser (2015), focused on the state of play with respect to the economic analyses for the PoM, and included an evaluation of the PoM recommendations guidance document.

One of the things that was agreed upon in the Program of Measures recommendations guidance document was to use a categorization of measures (see Table 1 above). Table 3 presents some examples of the various types of measures that the MS have analyzed in their PoM and shows that MS provided a long list of 1a and 1b measures (present policies), but that the list of 2a measures was significantly shorter, and only a few examples of 2b measures were provided.

According to the questionnaire, most Member States found the POM recommendations document to be very useful, including the categorization and

definition of various types of measures, even though different Member States still have different approaches when it comes to defining and identifying measures. For example, some Member States see green deals as one measure, whereas other Member States see those as a bundle of various individual measures. This composed nature of green deals makes it difficult to perform cost benefit analyses. Another difference in the cost benefit analyses that were performed by the various Member States is that some include only measures in their analyses that are taken by the government, whereas others include all measures by all stakeholders.

Type of measure	Examples mentioned by various Member States
1a Under other policies - Already implemented	<ul style="list-style-type: none"> • Fertilizer related requirements • Fisheries policies • Port reception facilities • Marine protected areas • Waste water treatment • Beach cleaning
1b Under other policies – Not yet implemented	Enhancement of existing policies, e.g. <ul style="list-style-type: none"> • Fisheries policies, including discard ban • Nitrate Directive, including buffer strips • Wastewater treatment and sewerage • Ballast water convention • Designation of new Marine Protected Areas • European Water Framework Directive
2a Under other policies, but go beyond existing ones	<ul style="list-style-type: none"> • Marine Protected Areas • Natura 2000 related regulations
2b Germane to MSFD	<ul style="list-style-type: none"> • Litter related measures

Table 3. Examples of various types of measures as mentioned by various Member States (Van der Veeren and Keijser, 2015)

Role of CBA in decision making	Number of Member States
To illustrate relevant trade-offs and support decision making	8
To narrow down and fine-tune possible measures	8
To inform policy makers and the wider public	5
To create support amongst stakeholders	3
CBA not started yet	10

Table 4: Role of CBA in the decision making process¹

With respect to the role of economic analyses in policy making, the responses to the questionnaire show that the cost-benefit analyses were used for multiple purposes in the process. Some Member States indicate that cost-benefit analyses helped to narrow the number of potential measures, other Member States stated that the cost-benefit analysis was used to support the decision making process and to inform the wider public (see Table 4).

The most important challenges to performing cost-benefit analysis were considered to be a lack of data on costs of measures, and the limited understanding of the cause-effect relationships and ecological processes, which make quantification of environmental and social impacts of measures difficult if not impossible. That's why, in order to be able to perform a cost benefit analysis, most Member States had to rely on expert judgement, assumptions and qualitative analyses, including scores in classes instead of monetary numbers, and multi criteria assessments and other alternative methods, such as the Eco point method (e.g. Bureau Waardenburg, 2011). Another challenge mentioned by various Member States is the lack of funds and time and capacity to perform the analyses. Nevertheless, cost benefit analyses were often considered to be very useful in the decision making process, in various ways. Examples of its use include (1) as a screening tool to narrow down the number of potential measures by removing ineffective and inefficient measures; (2) by actively supporting the decision making process with objective information on the relevant trade-offs, and/or informing policy makers and the wider public of the positive and

¹ Note: Not all the respondents have answered this question, because some Member States didn't perform a cost-benefit analysis yet at the moment of the questionnaire. However, some Member States have responded although they have not performed a cost-benefit analysis yet. Some Member States have given multiple answers. Hence, the total number of answers is more than the number of Member States who have responded.

negative consequences of potential measures (even though often not in monetary numbers). The fact that different Member States were in different phases in the process, with respect to identification of potential measures and performing cost benefit analyses on them, made it difficult to achieve real and effective international coordination, even though many Member States see a potential for more regional coherence through international cooperation at the level of the regional seas.

5. FUTURE CHALLENGES

This paper has given a review of the various guidance documents developed by the WG POMESA to shed light on the pragmatic requirements of the economic analyses in a policy context. Based on the experiences with the implementation of the MSFD so far, we have identified a number of future challenges for both decision makers and scientists that can be used to pave the way for a dialogue between interdisciplinary research projects and the policy advisors, including:

Various WG POMESA members have been involved in various projects as members of the advisory board or as researchers, such as The Changes Project², Marine Vectors³, JPI Oceans⁴, and KnowSeas⁵. However, the role of research projects in supporting the WG POMESA work could be increased and the timing of the projects could be better synchronized with the MSFD cycle according to which also the economic analyses are carried out within the six-year cycle. For example, the Initial Assessment (art 8) had to be submitted for the first time in 2012. The PoM (art 13) had to be submitted for the first time in 2016. As stated before, these actions have to be repeated in a 6-year cycle. This means that in 2018, MS have to submit an update of the Initial Assessment to the European Commission. However, the economic analyses have to be finalized well before this document deadline. Often only a summary of the economic analyses is included in policy documents so those texts must be drafted and discussed internally within the governments. In addition, the MSFD requires MS to have a public consultation process before sending the documents to the Commission. As a result of the public consultation, certain texts may have to be adjusted/renegotiated within the government. This entire process takes time. This means that if academic researchers would like to provide input to the

² http://www.stagesproject.eu/images/STAGES/deliverables/STAGES_Socio-Economic%20Workshop%20Report_v3_05%2002%2014.pdf

³ <http://www.marine-vectors.eu/>

⁴ <http://www.jpi-oceans.eu/>

⁵ <https://www.unipd.it/en/en/en/en/node/2428>

policy process (e.g. introduce new approaches, provide relevant data), they need to do this preferably four years in advance of the deadline for MS to send their documents to the Commission. The result has been that there have been experiences with large EU funded projects that provided very interesting deliverables, but these have come too late to be useful for the economic analyses by the MS.

The general presumption that there is no need for further research on the socioeconomic topics of the MSFD because the methods are already available leaves out the challenges economists face when applying the methods in practice. Here MS have faced significant and similar difficulties over the past years, which were also the focus of a European coordination and support action named STAGES (STAGES, 2013) that aimed to improve the scientific knowledge base to support the implementation of the MSFD. Part of that project was a workshop on the research needs with regard to the socioeconomic analysis under the Directive in October 2013. Representatives from science and MS were invited to share the state-of-the-art knowledge on socio-economic analysis. The workshop concluded that economic data can often be withdrawn from national statistical systems, even though these systems are often not designed to focus on maritime activities, which makes it difficult to separate coastal from land based activities. Another conclusion was that there is a serious lack of knowledge and understanding of marine ecosystems, its elements, its functions and its linkages to economic activities, which result in a clear knowledge gap with respect to the effectiveness and impacts of measures, and how changes in ecosystems (and their services) affect human welfare. This affects the socioeconomic assessment of the Program of Measures covering both cost-effectiveness and cost-benefit analysis.

The discussions at the STAGES workshop also covered the topic of social analysis. From a scientific point of view this seems to be a highly interesting issue, since it is an open point with need for further research. Although that might be the case from a scientific point of view, MS pointed out that following the decision in the guidance document presented in Section 3 (which is the central document for the implementation of the socioeconomic elements of MSFD up to date) the socio-economic analysis includes economic as well as social aspects, and therefore, an explicit distinction between “economic” and “social” analysis is not necessary under the MSFD. Therefore, it is not necessary to perform a separate social analysis.

The outcome of STAGES was assessed by WG POMESA as biased towards research driven questions because MS representatives were only a

minority in the workshop. However, the workshop on CEA/CBA (Arcadis 2014), co-organized by WG POMESA, underpinned that the challenges described by STAGES are still very relevant, and confirmed the need for pragmatic approaches (e.g. transparent storylines for stakeholders) as well as the need for further linking of ecological and economic analyses. People who are interested to see how we proceed in this process, can follow our activities and achievements on the CIRABC⁶ website (see reference list for exact web-address), and the WISE MARINE website⁷ for more information and knowledge gathered through the MSFD process. In the meantime, one of the things the WG POMESA will have to do is to formulate actions to respond to the recently published European Commission's assessment of the Member States' programmes of measures under the Marine Strategy Framework Directive (European Commission, 2018).

⁶ <https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp>

⁷ <https://water.europa.eu/marine>

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CIRCABC

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