# Learning from the assessment of costs and benefits carried out in the context of the MSFD evaluation

Presented at the MSFD Workshop

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**TABLE OF CONTENTS**

**1 INTRODUCTION ..... 4**
**2 LESSONS FROM THE ASSESSMENT OF COSTS UNDER THE MSFD EVALUATION ..... 5**
Questions to workshop participants on estimating costs ..... 5
Administrative costs ..... 6
Adjustment costs ..... 7
**3 LESSONS FROM THE ASSESSMENT OF BENEFITS UNDER THE MSFD EVALUATION ..... 8**
Questions to workshop participants on estimating benefits ..... 8
Efficiency improvements ..... 8
Environmental benefits ..... 9
Indirect benefits ..... 11

# 1 INTRODUCTION

This note presents in a succinct manner **the socio-economic knowledge** that has been mobilised for assessing costs and benefits within the frame of the evaluation of the MSFD that will be published by the European Commission (EC) in 2023.

The assessment of the costs and benefits that result from the MSFD implementation faced several general challenges including:

- The limited **available knowledge base** and attention given to MSFD costs and benefits in Member States (MS)' reporting. Particular challenges exist for estimating administrative costs borne by Member State authorities and institutions to implement the Directive, e.g. the development of marine strategies or the setting-up and implementation of monitoring programmes;
- The relatively **short time between the adoption of the MSFD (2008) and the date of the MSFD evaluation (2022)**. While enhanced integrated frameworks (e.g. integrated marine strategies) may have been delivered, it is too early in most cases to assess whether these frameworks are delivering cost-effective actions. Member States are still in the process of implementing measures from their first MSFD Programmes of Measures (PoM), with measures proposed not yet fully implemented or their effects realised.
- The difficulty to distinguish the so-called **incremental costs and benefits** that can be attributed to the MSFD. As a framework directive, the MSFD is designed to work in synergy with the EU and international policy framework. In view of the other legislation and policies impacting and protecting the marine environment, it is difficult to assess the costs of actions that contribute solely to the protection of the marine environment, or to understand precisely the environmental, social and economic benefits that can be attributed to the MSFD alone. Indeed, most of the measures listed in the first PoMs have been taken to implement provisions of other legislation, with observed benefits belonging to these legislations rather than to the MSFD.

Prepared as a background note to the MSFD workshop organised on 15 November 2022 by the EC, this note aims to support thinking, feedback and contributions from workshop participants on:

- Additional **evidence** that can be mobilised for assessing the costs and benefits of the MSFD, as well as of the potential policy options that could be considered in the context of the review of the MSFD and its Impact Assessment (IA);
- (Alternative) **methods and tools** that could be applied for delivering robust estimates of the different categories of costs and benefits.

# 2 LESSONS FROM THE ASSESSMENT OF COSTS UNDER THE MSFD EVALUATION

## Questions to workshop participants on estimating costs

Q1. **Which cost category(ies)** are likely to be most important in relation to the MSFD implementation? Why?

Q2. Which (publicly available) evidence could be mobilised to estimate the **administrative costs** of the MSFD implementation (in addition to survey estimates and available labour costs mobilized so far)? Which key factors or parameters are expected to influence these costs? Are you aware of studies that have assessed administrative costs, e.g. for your Member State, and that could be "source of inspiration" for a wider EU assessment?

Q3. Are **adjustment costs** to the MSFD implementation already taking place in your country? If yes, for which sector(s) in particular, and as a result of which MSFD obligation or measure?

Q3. Have such adjustment costs been translated into **indirect costs** in terms of changes in the quality and/or price of goods and services? If yes, for which sector/service/good – and which evidence can be used to demonstrate it?

Q4. Would you know of **studies and data sources** that have investigated different cost types related to the implementation of marine policy? In particular, which cost types have received particular attention (or on the contrary did not receive attention) in studies carried out for supporting the second PoMs?

To measure the efficiency of the implementation of the MSFD, the evaluation considered several different types of costs. These costs have been categorised according to the typology of costs suggested in the EU Better Regulation Toolbox[1] and include:

- **Direct compliance costs**
  - **Administrative costs:** costs borne by businesses, citizens, or public authorities in order to comply with obligations in legal rules;
  - **Adjustment costs:** those investment and expenses that business, citizens or public authorities incur in adjusting their activity to legal requirements, including costs related to the implementation of the PoMs (necessary to meet environmental targets of marine strategies and achieve GES) and actions that economic actors to comply with obligations, restrictions or other implications of compliance measures.
- **Indirect costs**
  - **Indirect compliance costs:** costs related to the fact that other stakeholders have to comply with, or are indirectly impacted by, the new legislation.

Table 1 presents for each **cost category** the scope **of MSFD implementation** (activities or implications that generate costs for each category), **cost parameters** (what types of things are measured) as well as **data and information sources (**where data and information come from for each type of cost and cost parameter) that have been mobilized for assessing different cost types.

**Table 1: Overview of MSFD costs and related data and information sources** (from the forthcoming MSFD evaluation report)

| Cost category per Tool #56 | Scope of MSFD implementation | Cost parameters | Data and information sources |
|---|---|---|---|
| **DIRECT COSTS** | | | |
| **Direct compliance costs** | | | |
| Administrative costs – labour costs in Member State institutions | Legal provisions of the MSFD that impose direct requirements on Member States | Staff requirements for reporting, monitoring, assessments, implementation, marine strategies within Member State institutions | Estimates of staff dedicated to aggregated tasks (provided by Member State authorities in the targeted survey) |

[1] BRG toolbox 2021: Too1 #56 Typology of costs and benefits, Section 3. Different types of costs and benefits, pp. 499-500.

| Cost category per Tool #56 | Scope of MSFD implementation | Cost parameters | Data and information sources |
|---|---|---|---|
| | | | Average labour costs for Member State administrations (Eurostat) |
| | Establishment and operation of CIS to support MSFD implementation | Staff requirements CIS | CIRCABC<br>Average labour costs for Member State administrations (Eurostat) |
| Administrative costs – other costs | Requirement to establish and carry out monitoring programmes | Costs related to field work, laboratory work, data management, maintenance, and transport | Data available in studies for Finland, the Netherlands, Italy, Croatia |
| | | Costs of monitoring related to existing legislation | Nygard et al. (2016)[2] |
| Adjustment costs | Investments to 'adjust' activities to MSFD requirements - implementation of the measures contained in the PoMs | Costs of implementing measures that are new or directly attributable to the MSFD | Data available for the Netherlands, Sweden, Finland, France, Malta, Poland |
| | | Share of new measures reported by Member States | First assessment report on PoMs |
| | | Share of implemented measures reported by Member States | 2020 report on the implementation of the MSFD |
| **INDIRECT COSTS** | | | |
| **Indirect compliance costs** | | | |
| Costs related to the fact that other stakeholders have to comply with legislation | Costs to businesses linked to incoherence of policies (including between different scales) and possible lost development opportunities | Qualitative description of some examples | |

## Administrative costs

To estimate the **administrative costs**, the evaluation collected data on: estimates of administrative efforts to implement key activities such as the development of marine strategies and PoMs, monitoring and reporting provided via a targeted survey; existing knowledge in terms of labour costs in MS (Eurostat); the costs of monitoring programmes reported by selected MS as well as evidence from the CIS process (in terms of number, duration and attendance at meetings). Based on this information, the evaluation study estimated annual efforts to set up the procedural and organisational components of the MSFD to deliver an integrated marine management framework, including: administrative labour costs

[2] Nygård, H., Oinonen, S., Hällfors, H. A., Lehtiniemi, M., Rantajärvi, E., & Uusitalo, L. (2016). Price vs. value of marine monitoring. Frontiers in Marine Science, 3, 205.

(EUR 62.5 m), labour costs of CIS participation (EUR 28.14 m per year), and other administrative costs / monitoring programmes (EUR 315.93 m) at total of **EUR 406.5 million per year.**

## Adjustment costs

**Adjustment costs** related to the implementation of measures proposed under PoMs have been estimated building on cost evidence from the first PoMs combined with information on the current implementation of new measures contained in the 2020 report on the implementation of the MSFD[3] with 25 % of PoM's measures classified as 'new additional measures' (relevant to he MSFD). Based on the PoM interim reports (Article 18), the 2020 report on the implementation of the MSFD concluded that 16 % of the new measures had been implemented, while the remainder were underway, or planned but not started. The total costs of PoMs were estimated for the entire EU on the basis of PoM costs information available for six[4] MS at between EUR 1 017.12 million and EUR 1 409.99 million per year. Assuming 4 % of the reported measures in PoMs are new measures, the yearly incremental adjustment costs of new measures were estimated **between EUR 40.68 and 56.40 million per year**, estimates to be read cautiously given the uncertainties and assumptions involved. Beyond available estimates of costs of measures, there is no visible evidence on possible **adjustment costs** for marine-based sectors nor on their transmission to final consumers through price changes or the quality/availability of goods or services. As new regulatory obligations from the MSFD implementation are marginal, and because costs of measures implemented are limited, such adjustment costs are expected to have been negligeable to date.

Total direct compliance costs, which comprise administrative costs and adjustment costs, were thus estimated to be between **EUR 447.25 million – EUR 462.97 million per year**.

[3] European Commission, SWD(2020) 60 final, Commission Staff Working Document, Key stages and progress up to 2019, accompanying the Report from the Commission to the European Parliament and the Council on the implementation of the Marine Strategy Framework Directive.

[4] FI, FR, MT, NL, PL, SE. Second implementation cycle PoMs not yet published for the remaining Member States.

# 3 LESSONS FROM THE ASSESSMENT OF BENEFITS UNDER THE MSFD EVALUATION

## Questions to workshop participants on estimating benefits

Q1. Do you know of studies that have assessed, quantified and/or monetised the **efficiency gains** (e.g. reduced costs of measures because of enhanced coordination, more targeted measures benefiting from the new scientific knowledge produced, etc.) resulting from the implementation of the MSFD's integrated framework, enhanced knowledge and strengthened (regional) cooperation?

Q2. Which methods (other than the one applied building on the results of WTP surveys) could be proposed to assess the MSFD **environmental** (actual and potential) **benefits** at the regional sea and/or EU scale? Could cost-based methods assessing reduced efforts to respond to the degradation of marine ecosystems (e.g. beach cleaning) be an alternative?

Q3. Would you know of **studies and data sources** that have investigated different types of benefits related to the implementation of marine policy? In particular, which benefit types have received particular attention (or to the contrary did not receive attention) in studies carried out for supporting the second PoMs?

The MSFD evaluation has mainly focused its attention on the assessment of **direct regulatory benefits**[5] including:

- **Efficiency improvements**: benefits that result from the delivery of integrated marine strategies, building *inter alia* on the strengthening of the marine knowledge base and reinforced coordination at the scale of regional seas, that are expected to set the basis for a more (cost) effective delivery of improvements in environmental status for all marine ecosystems and the achievement of GES – ensuring better understanding of marine challenges and solutions by all involved, sectoral integration towards efficient delivery of GES, optimal monitoring, and higher visibility of marine challenges and solutions for society as a whole.
- **Environmental benefits**: benefits that result from the achievement of GES for all marine ecosystems, particularly benefits to society related to: (a) enhanced ecosystem services (e.g. more sustainable fisheries and sustainable long-term revenues to fishers, higher-quality tourism and leisure activities, enhanced climate resilience, opportunities for sustainable aquaculture development); (b) reduction in efforts for compensating/mitigating marine ecosystems not in good health (e.g. costs of beach cleaning, removing algae from eutrophic waters, purification of shellfish); (c) positive public perceptions of healthy marine ecosystems, including potential use by future generations.

Similar to the assessment of costs, the focus of the analysis has been on **incremental benefits that can be attributed to the MSFD and have been delivered to date**. There is an important distinction to be made between environmental benefits already achieved (limited so far) and those expected with the full implementation of the MSFD and the achievement of GES for all European seas.

## Efficiency improvements

The evaluation identified many achievements of the MSFD, with the **integrated approach to planning and improved knowledge base** considered by many to have improved the overall efficiency in the approach to marine protection in the EU. The main source of evidence for assessing efficiency improvements was the targeted survey carried out in support to the MSFD evaluation. Responses from the survey stressed for example the role of the MSFD to delivering a clearer regulatory framework, and reducing administrative burden through a simplified, harmonised and digitalised reporting system. More transparency, data availability and shared knowledge to support marine management at all scales was also reported as an important benefit of the MSFD that supports better evidence-based management

[5] BRG toolbox 2021, Too1 #56 Typology of costs and benefits, Section 5. Different types of benefits, pp. 501-502.

and scientific value. In addition, the majority of respondents highlighted that the MSFD: (1) has led to greater coordination at national, regional and EU level – providing opportunities to set up common (more efficient) strategies and joint implementation: (2) contributed to the EU's global commitments to protect the marine environment, including the achievement of Sustainable Development Goals (SDGs): (3) was also a driving force that led to the adoption of the Single Use Plastics Directive.

Quantitative evidence supporting the targeted survey results is very limited, partly as a result of the difficulty to assess what would have happened without the adoption of the MSFD.

### Environmental benefits

Beyond efficiency gains, the main expected benefits of the MSFD relate to **welfare gains, in particular from clean, healthy and productive seas**. Marine and coastal waters provide a variety of benefits to society through direct use, indirect use of ecosystem goods and services (e.g. extraction of marine organisms and minerals, use of waterways for shipping, use of the marine environment for energy production, recreation, control of the water cycle, contribution to climate regulation) and benefits related to improved environmental status independent of present use - so-called non-use benefits (e.g. existence value of marine biodiversity, preserving the marine environment for future generations). Improvements in the quantity and quality of supplied ecosystem goods and services will also result in economic benefits and an increase in general welfare.

The **(incremental) environmental benefits directly attributable to the MSFD** will stem from the implementation of new measures. Given the current share of implemented new measures (4 % of total PoMs) and the fact that benefits will not accrue immediately as it will take several years for ecosystems to recover after PoMs are implemented, it is assumed that the actual environmental benefits of the MSFD are relatively limited to date but that significant benefits will be delivered as the MSFD implementation continues and delivers clean, healthy and productive oceans and seas.

Some MS and scientific studies have reported the **potential economic value of anticipated environmental benefits from achieving GES** in their economic and social analyses (Article 8). For the estimation of total potential economic value from achieving GES, the majority of the evidence available builds on valuation studies and revealed preference methods relying on questionnaires examining how much people are willing to pay for an improvement in environmental conditions. Box 3 shows the **available evidence on Willingness to Pay (WTP) to achieve GES** that can be used to estimate the total potential economic value of expected environmental benefits from full MSFD implementation.

**Box 1: WTP to achieve GES for some Member States** (adapted from the forthcoming MSFD evaluation report)

**WTP to achieve GES for some Member States**

Valuation studies for estimating societal benefits that result from improvements in the ecological status of marine ecosystems and the achievement of GES relied on choice experiments to estimate WTP per household and person. Those choice experiments asked respondents to express their preferences between several scenarios presenting different states of the marine environment reflected through a diversity of benefit characteristic (or so-called attributes). The attributes reflect (groups of) MSFD descriptors (e.g. biodiversity, eutrophication or invasive species) that are seen as the most problematic for the marine area that is the focus of each study.

| Member State | Attributes | Source |
|---|---|---|
| DE | Eutrophication; biological diversity; non-indigenous species; fish stocks; hazardous substances; physical impacts; littering | German Environment Agency, 2021[6] |

[6] Oehlmann, M., Nunes-Heinzmann, A-C., Bertram, C., Hellwig, R., Interwies, E., Meyerhoff, J. (2021). The value of the German marine environment. Costs of degradation of the marine environment using the example of the German North Sea and Baltic Sea. German Environment Agency.

| WTP to achieve GES for some Member States | | |
|---|---|---|
| EE | Frequency of large-scale oil and chemical spills; probability that oil and chemical pollution reaches the shore; water quality; non-indigenous species | Tuhkanen et al., 2016[7] |
| EL | Species status; beach development; MPA zoning; Posidonia Oceanica state; non-indigenous species warnings | Halkos and Galani, 2016[8] |
| FI | Eutrophication; biodiversity; fish stocks; hazardous substances; physical impacts | Nieminen et al., 2019[9] |
| FR | N/A | Norton and Hynes, 2018[10] |
| HR | Biodiversity; water quality; recreation | European Commission, 2021[11] |
| ES | N/A | Norton and Hynes, 2018[12] |
| IE | Biodiversity and healthy marine ecosystem; sustainable fisheries; pollution levels; non-native species; physical impacts | Norton and Hynes, 2018[13] |
| IT | Biodiversity; water quality; recreation | European Commission, 2021[14] |
| LV | Reduced number of native species; water quality for recreation; new harmful alien species' establishing | Pakalniete et al., 2013[15] |
| PT | N/A | Norton and Hynes, 2018 |
| SE | N/A | Anthesis, 2020 |
| SI | Biodiversity; water quality; recreation | European Commission, 2021[16] |

All of these valuation studies focused on incremental benefits obtained from full MSFD implementation compared to a business-as-usual or baseline scenario, with respondents asked to state their preference between: 1. a business-as-usual scenario describing how marine ecosystems would evolve without the MSFD but with all other policies in place and delivering some improvements in ecological state; and 2. one or more alternative scenarios corresponding to the implementation of the MSFD and the achievement of GES. Statistical inference of the data allowed the measurement of the value people attach to improvement in environmental conditions through the concept of individual WTP, defined as the maximum amount of money an individual is prepared to give up for an improvement in environmental conditions, which represents the benefits of a change in environmental status in monetary terms.

The figure below presents WTP estimates for 13 Member States for which valuation studies exist. empirical evidence suggests that WTP varies from EUR 7.29 to EUR 92.30 per person per year.

**Differences in individual WTP for achieving GES provided by studies available for 13 MS**

[7] Tuhkanen, H., Piirsalu, E., Nõmmann, T., Karlõševa, A., Nõmmann, S., Czajkowski, M., & Hanley, N. (2016). Valuing the benefits of improved marine environmental quality under multiple stressors. *Science of The Total Environment, 551*, 367-375.

[8] Halkos, G., & Galani, G. (2016). Assessing willingness to pay for marine and coastal ecosystems: A Case Study in Greece.

[9] Nieminen, E., Ahtiainen, H., Lagerkvist, C. J., & Oinonen, S. (2019). The economic benefits of achieving Good Environmental Status in the Finnish marine waters of the Baltic Sea. *Marine Policy, 99*, 181-189.

[10] Norton, D., & Hynes, S. (2018). Estimating the benefits of the Marine Strategy Framework Directive in Atlantic Member States: a spatial value transfer approach. *Ecological Economics, 151*, 82-94.

[11] European Commission (2021). Study on integrating an ecosytem-based approach into maritime spatial planning. Project case-study reports. Report, p. 295.

[12] Norton, D., & Hynes, S. (2018). Estimating the benefits of the Marine Strategy Framework Directive in Atlantic Member States: a spatial value transfer approach. *Ecological Economics, 151*, 82-94.

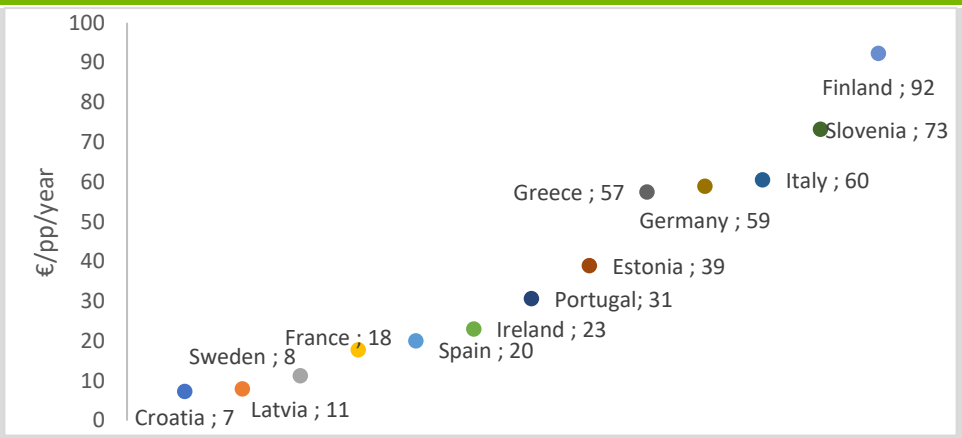
[13] Norton, D., & Hynes, S. (2018). Estimating the benefits of the Marine Strategy Framework Directive in Atlantic Member States: a spatial value transfer approach. *Ecological Economics, 151*, 82-94.

[14] European Commission (2021). Study on integrating an ecosytem-based approach into maritime spatial planning. Project case-study reports. Report, p. 295.

[15] Pakalniete, K., Fedoroviča, K., Muraško, A., Strāķe, S., & Aigars, J. (2013). Valuing benefits of reaching the MSFD targets by applying the. *Choice Experiment" method. Latvian study report." Report of the GES-REG project. AKTiiVS (available at http://gesreg. msi. ttu. ee/en/results).*

[16] European Commission (2021). Study on integrating an ecosytem-based approach into maritime spatial planning. Project case-study reports. Report, p. 295.

**WTP to achieve GES for some Member States**




*Notes: WTP values in 2020 prices (CPI from Eurostat), adjusted for purchasing power parities with baseline 2020 EU-27 consumer prices (purchasing power parity data from Eurostat).*

*Source: Authors' development, based on literature*

Building on the results from available studies, **value transfer (also known as benefit transfer)** was used to estimate economic benefits for Member States whose primary valuation data were missing. Multiplying WTP information (from original valuation studies and from value transfer) by the total adult population of EU countries bordering a regional sea (336.8 million people as of 2020[17]) showed that the potential aggregate benefits of reaching GES in Europe's regional seas amounts to EUR 13.6 billion per year.

Note that these are estimates of the potential (incremental) benefits of achieving GES, most of which are still to come depending on measures implementation and their impact on the speed of recovery of marine ecosystems. **It is unclear, however, which share of these annual benefits have already been delivered by the MSFD implementation.**

## Indirect benefits

Due to the interconnectedness of the economy, direct benefits spread via: (i) the enhanced ecosystem services delivered by healthier marine ecosystems to different economic sectors and to society, including citizens' health and access to services for vulnerable groups; (ii) other land-based and marine-related economic activities using/purchasing products and services from marine-based economic activities (seafood processing, port activities, equipment); (iii) through spending of (additional) income generated by marine activities and all other activities benefitting directly or indirectly from GES improvements. Given that implementation of measures is still progressing and ecosystems recover slowly, **indirect benefits are expected to be marginal as yet**.

If the MSFD were fully implemented and GES achieved, more sizeable potential indirect benefits could be expected. Full implementation of the MSFD would have multiplier effects on income and jobs in other marine-related sectors. Potential indirect benefits include changes in public spending, in gross value added, employment and prices and are **illustrated in the following box for two areas of marine protection.**

[17] Eurostat.

**Box 2: Potential indirect and induced benefits of marine litter reduction and marine protected areas (MPAs) (**from the forthcoming MSFD evaluation report)

**Potential indirect and induced benefits of marine litter reduction and MPAs**

Reduced marine litter has several positive direct and indirect economic impacts[18].

- Savings from less cleaning, damage and repair operations for the fisheries sector, aquaculture, agriculture, harbours and local authorities - that income will be spent elsewhere in the economy.
- Lower health risks related to microplastics in seafood increasing/restoring consumer trust and increased seafood consumption, with positive effects on opportunities for the seafood industry.
- Better aesthetics of recreational marine areas, upgrading of tourist destinations resulting in more recreational visitors and tourists, increased local consumption and employment.
- Decrease in the risk of collision and cargo loss for commercial shipping, with savings from decreased repair costs, shutdowns, and better public image.

Several indirect economic impacts are related to the implementation of MPAs[19].

- Increased spending in local businesses due to increased tourism and improved recreational experience.
- Increased catch, of better quality, contributing to future business security and job opportunities for the fisheries sector and seafood processing industry.

[18] Aretoulaki, E., Ponis, S., Plakas, G., Kostantinos, A. (2021). Marine plastic littering: A review of socio-economic impacts. *Journal of Sustainability Science and Management 16*, pp 276-300. Article-19-16.3.pdf (umt.edu.my)

[19] Rees, S.E., Attril, M.J., Austen, M.C., Mangi, S.C., Rodwell, L.D. (2012). A thematic cost-benefit analysis of a marine protected area. *Journal of Environmental Management 114*, pp 476-485.