Cost and benefit assessment for coordinated measures

*For the joint implementation of MSFD in Bulgaria and Romania – Phase II*

Version 02/12/2015

# Introduction

This document contains an analysis of the costs and benefits for the 17 proposed coordinated measures (shortlist) identified by Bulgarian and Romanian experts as actions that will contribute to achieve GES for the transboundary impacts discussed.

These measures represent a current best assessment of the type of action which could be needed to achieve the targets, but at this stage these proposed coordinated measures do not have any formal status yet.

The potential costs and benefits have been assessed according the document on “*Methodology on cost and benefit assessment for coordinated measures for the joint implementation of the MSFD in Bulgaria and Romania – Phase II (version 22.05.2015)”.*

# Defining Operational actions for the measures

The 17 proposed coordinated measures from the shortlist have been broken down in operational actions. Reference is made towards the final shortlist included as an Annex to the final project report (Annex In-depth analysis PoM – Worksheet “Shortlist”).

# Assigning cost components to measures

The assignment of the cost components to the operational actions under the measures forms the basis of the detailed cost assessment, further worked out under Section 5.

# First rough assessment of the selected measures

As a first step in the cost assessment, costs will be divided into low (< 50.000 €), medium (50.000 – 1 M €), high (> 1 M €) categories each with a preliminary cost range. These costs should be interpreted as one off costs per Member State, with yearly costs being discounted for. The used time period is 6 years, corresponding to the MSFD planning cycle.

This first rough assessment has been illustrated for 10 measures during CBE workshop 3/4/5 (Brussels, May 2015). The outcomes of the rough assessment of these measures can be found in the table below.

|  |  |
| --- | --- |
| Measure | Cost category(cost over 6 yrs) |
| Designation of zones for beam trawling. Long-term observation on the impacts in the designated zones permitted for beam-trawling. Research on the activities. When necessary change of usage requirements | * Medium: 50.000 – 1 million €
 |
| Setting regulations or prohibitions on activities within MPAs or potentially affecting the MPA (No constructions and industrial activities, no motorsports (high speed boats),…) | * Low: < 50.000 €
 |
| Control on prohibitions of activities within or near MPAs | * Medium: 50.000 – 1 million €
 |
| Stimulation of environmental friendly practices in small scale fisheries | * Low: < 50.000 €
* Medium: 50.000 – 1 million €
 |
| Precise the spatio-temporal bans and closures for fish species (not commercial) - fisheries | * Medium: 50.000 – 1 million €
 |
| Development of Regional Marine litter Action Plan (joint methodology for quantifying the marine litter, identification of sources, prosecution of offenders, etc.)  | * Medium: 50.000 – 1 million €
 |
| Ratification and implementation of the Ballast Water M Convention by the BS countries  | * High: > 1 million €
 |
| Limiting the impact of fishing on the marine environment (technical improvements to mitigate the impact on marine environment, e.g. mesh size restrictions) Aim: to achieve MSY | * High: > 1 million €
 |
| Development of common multiannual management plan for certain stocks  | * Medium: 50.000 – 1 million €
 |
| Research activities related to better knowledge about impact of less studied anthropogenic pressures (e.g. atmospheric deposition etc.) on marine waters and the seabed habitats, the fish, marine mammal and seabird populations  | * High: > 1 million €
 |
| Alignment of BG and RO Environmental Impact Assessment (EIA) procedures related to investment intentions through the EEZ of BS countries with significant transboundary effects with respect to MSFD 2008/56/EO | * Low: < 50.000 €
 |
| Introduction of ecolabelling (via existing labels) | * Medium: 50.000 – 1 million €
 |

# Detailed assessment

As a final step in the cost assessment, if available, cost data may be assigned to each cost component of the selected measures and their operational actions. Per measures the possible cost components are grouped, each including a table where cost data can be filled in. The costs will be given as one off cost and total annual costs,in case of operational costs. Operational costs need to be discounted from the 6 year planning period to the basis year 2015 at a discount rate of 4%[[1]](#footnote-1).

The following assumptions are to be taken into account:

* Meetings between MS: unit cost per meeting as indicated in chapter **Fout! Verwijzingsbron niet gevonden.** (cost assumptions)
* Meetings within MS: not separately indicated in the cost tables
* In case no data is available, the table is filled in with ‘**n.a.**’ (not available).
* In case a cost category is not relevant, the sign **‘/’** is used.

The detailed assessment has been performed for the 17 shortlisted measures. During CBE 3/4/5 (Brussels, May 2015) 10 measures were initially assessed and further discussed. As a result, the methodological approach was further refined and then used to finalise the assessment of the other shortlisted measures. The outcomes of the detailed assessment of these measures can be found in the following sections.

## Measure 1

| MEASURE  | *Research activities related to better knowledge about impact of atmospheric deposition on marine environment*  | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**1* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Research project costs*  |
| **Assumptions**  | * -Study project of 4 years
* Costs of similar research projects
* Marine mammal ongoing study BG: 1,5 mio Euro (satellite, boat control)
* Others (input from MS needed)
* First estimate based on workshop 6/5: 1,5 mio Euro
* Estimate based on unit cost per research year: 200.000 Euro (4 x 50.000 Euro per year for a team of 5 researchers)
 |
| **Cost components** |

|  |  |  |
| --- | --- | --- |
| **Actions required**  | **Estimated one-off cost, €** | **Estimated cost per year (€)** |
| 4 year research programme | ?  |  |
| **Total cost** | **?**  |  |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS: ??* |
|  | *Overall uncertainty:* Red: Uncertain (<33% probability)As the scope of the research is not defined yet, an estimation of research costs is not straightforward.  |
|  | *Scoring (size class):*  |

|  |  |
| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| **Research - knowledge –**no short term benefits expected as this does not directly lead to changes in the state of the environment Benefits are difficult to identify this early in the process. (Effects from atmospheric deposition are the same as for nutrients and contaminants in general.) | 1 | 1 | Improved marine environment. | 1 |

 |

Research programmes should be interpreted as accompanying measures leading to gained insight and knowledge on marine issues. They should not merely be weighed/judged according to the outcome of economic analysis but viewed in a greater framework within the Programme of Measures for the MSFD.

## Measure 2

| MEASURE  | *Introduction of Eco labelling (based on existing relevant ecolabels)* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**2* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Working group with specialists and sector*  |
| **Assumptions**  | * 2 national meetings will take place with specialist and sectors, each attended by 3 public servants
 |
| **Cost components** | * Negotiation costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Planning & preparation | 100 | 70 | 7000 |
| Meetings with neighbouring MS | 2 | 600 | 1.200 |
| Follow up | 20 | 70 | 1400 |
| **Total implementation cost** |  |  | **9.600** |

 |
| **Operational action 2****Operational action 3** | *Legislative preparatory work1670**Sectoral and Public consultations* |
| **Assumptions**  | * *Consultation with wider relevant authorities, sectors and stakeholders:*
* *Legislative revision if necessary and adoption:*
 |
| **Cost components** | * Implementation costs for a law, regulation, …

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required**  | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Legislative preparatory work  | 100 | 70 | 7.000 |
| Sectoral and public consultations | 20 | 70 | 1.400 |
| Finalisation (Approval and sign-off, advertising) | 80 | 70 | 5.600 |
| Meetings with neighbouring MS | 2 | 600 | 1.200 |
| Staff travel/accommodation | 2 | 750 | 1.500 |
| **Total implementation cost** |  |  | **16.700** |

 |
| **Operational action 4** | *Public awareness campaigns costs* |
| **Assumptions**  | * *Full media approach for the main public (tv, radio, press, billboards)*
* *Media approach for the fishery sector (via newsletters, advertisement in sectoral periodicals)*
* *Input MS needed to further estimate costs media campaign*
 |
| **Cost components** | * Communication costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Advertisement (main public) |   |   | 50.000 |
| Advertisement (fishery sector) |   |   | 800 |
| Staff time |  20 |  70 | 1400 |
| Other administration costs |   |   |  |
| **Total estimate:**  |  |  | **52.200** |

 |
| **Operational action 5** | *Cost for the fishery sector* |
| **Assumptions**  | * Investment & operational costs for a change in fishing techniques: not known
* Audit for ecolabel: 2000 euro per company per year (ecolabels.fr);
* Adequate rise in selling price per kg fish/mollusc: not known
* Main profits are expected from exports (given average consumption of fish per year is 5kg per capita for BS MS
* Nr of fishing company: 10 in BG; RO 4? (input needed from MS).
	+ Audit costs: 20.000€ in BG, 8000€ in RO (based on 2000€ per company)
 |
| **Cost components** | * Sectoral costs:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **BG** | **RO** |
| **Actions required**  | **Estimated one-off cost, €** | **Estimated cost per year (€)** |  |
| Investment costs |  Not know |   |  |
| Operational costs |  | 20.000 | 8000 |
| Loss of added value |  | / |  |
| Loss of employment |  | / |  |
| **Total cost** |  | **20.000** | **8000 -** |
| ***Discounted to one off costs:*** |  | ***105.000*** | ***42.000*** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS: 183.500 Euro (BG)* *120.500 Euro (RO)* |
|  | *Overall uncertainty:* Yellow: Medium uncertainty(>33–66% probability)Due to lack of information to estimate media campaign & net cost/profit per sold ecolabelled fish/molluscs |
|  | *Scoring (size class):*

|  |  |
| --- | --- |
| **4** | **€ 50.000 - 200.000** |

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| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| --- | --- | --- | --- | --- |
| The benefits will depend on the type of label being implemented. The main question is if the fishing sector themselves can see the benefits of committing to a labelling scheme. In other words will the payment for a labelling scheme be outweighed by the profit gained form selling labelled fish. Depending on the focus of the scheme, the environmental benefits will vary as some schemes focus on the production phase where others on the quality of the fish for consumption. May only be relevant for niche markets - local and for export |  1 | 1 | Improved marine environment.  | 1 |

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## Measure 3

| MEASURE  | *Development of Regional Marine litter Action Plan (joint methodology for quantifying the marine litter, identification of sources, prosecution of offenders, etc.)* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**3* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *WG on Action Plan elaboration creation* |
| **Assumptions**  | * 2 working group meetings.
* Implementation of action plan is not included in the scope of the measure
 |
| **Cost components** | * Negotiation costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required**  | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Preparation (Planning, writing) Consultation, Finalisation | 200 | 70 | 14.000 |
| Meetings with neighbouring MS | 2 | 600 | 1.200 |
| Staff travel/accommodation | 2 | 750 | 1.500 |
| **Total implementation cost** |  |  | **16.700** |

 |
| **Operational action 2** | *Development of action plan* |
| **Assumptions**  | * /
 |
| **Cost components** | * Negotiation costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Planning & preparation | 10 | 70 | 700 |
| Drafting Action Plan & Adoption | 60 | 70 | 4200 |
| Outsourced scoping study | 50 | 250 | 12.500 |
| Meetings with neighbouring MS | 2 | 600 | 1.200 |
| Staff travel/accommodation | 2 | 750 | 1.500 |
| **Total implementation cost** |  |  | **20.100** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS: 36.800 Euro* |
|  | *Overall uncertainty:* Green: Certain (>66% probability) |
|  | *Scoring (size class):*

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| --- | --- |
| **5** | **< € 50.000** |

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| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

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| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| **Development of action plan**No benefits from creation of plans. Necessary to implement plans to get benefits. Eventually less marine litter will be present in the waters. |  1 | 1 | Improved marine environment through less marine litter in the waters  | 1 |

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## Measure 4

| MEASURE  | *Assessment and enforced control of the activities of collection and transportation of ship - generated waste (this includes garbage as domestic, food and plastics in term of MARPOL Annex V, also oil waste (sludge & bilge) and wastewaters (sewage).* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**4* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Training of control staff* |
| **Assumptions**  | * One day of training at 3 ports
* Training material (print outs, venue costs): 100€ per sessions
 |
| **Cost components** | * Training costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Preparation | 5 | 70 |  350 |
| Training material  |  |  | 300 |
| Giving training  | 3 | 70 |  210 |
| Follow up  | 2 | 70 |  140 |
| **Total estimate:**  |  |  | **1.000** |

 |
| **Operational action 2** | *Additional staff for control* |
| **Assumptions**  | * BG: Costs for increasing of the number of the control staff (inspectors) of Maritime administration (minimum 0,5 person in Varna and 0,5 person in Burgas)
* RO: same assumptions
 |
| **Cost components** | * Estimated FTE costs:

|  |  |  |
| --- | --- | --- |
| **Actions required**  | **Estimated one-off cost, €** | **Estimated cost per year (€)** |
| Extra police officers  |  | 12.000 |
| **Total personnel cost** |  | **12.000** |
| ***Discounted to one off costs*** |  | ***63.000*** |

 |
| **Operational action 3** | *Operational costs for control* |
| **Assumptions**  | * Nr of ports to be inspected?
* Nr of inspections per year?

⇨ Not possible to assess at this stage |
| **Cost components** | * Enforcement costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of controls/yr** | **Estimated cost per control (€)** | **Estimated cost per year (€)** |
| Surface surveillance  | n.a. |  |  |
| Joint enforcement patrols with local officer | n.a. |  |  |
| Investigations/prosecutions  | n.a. |   |  |
| **Total surveillance cost** |  |  |  |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS: minimal 64.000€, but probably < 200.000€ (BG)/ (RO)* |
|  | *Overall uncertainty:* Yellow: Medium uncertainty(>33–66% probability)Enforcement costs cannot be estimated straightforward and form the major part of the measures’ costs. |
|  | *Scoring (size class):*

|  |  |
| --- | --- |
| **4** | **€ 50.000 - 200.000** |

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| PART II | *Benefit assessment* |
| **Scoring** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| Control - enforcement - This will be for the benefit of the fishes, mammals and beaches |  3 | 3 | Improved marine environment.  | 3 |

 |

## Measure 5

| MEASURE  | *Annual awareness raising campaigns addressed to business (commercial, beach users, fishermen, etc.) and public (tourists, students, children, etc.) related to the sources and the environmental consequences of marine litter and the need for waste recycling* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**5* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Capacity building events* |
| **Assumptions**  | * Communication material: 120 euro for 200 leaflets (BG)
* One meeting between the countries to coordinate
* 5 persons participating in one event or 2.5 in two events
* advertising of the public with billboards and radio)
 |
| **Cost components** | * Coordinating and setting up events (one off)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Meetings with neighbouring MS | 1 | 600 |  600 |
| Staff travel/accommodation | 1 | 750 |  750 |
| Leaflets for fishermen |  |  | 120 |
| Staff time | 15 | 70 | 1.050 |
| Stakeholder meeting & follow up | 7 | 70 | 490 |
| Other administration costs |   |   | 140 |
| **Total estimate:**  |  |  | **3.150** |

 |
| **Operational action 2** | *Awareness raising* |
| **Assumptions**  | * Full media approach for the main public (tv, radio, press, billboards)
* Media approach for the fishery sector (via newsletters, advertisement in sectoral periodicals)
* Input MS needed to further estimate costs media campaign
 |
| **Cost components** | * Communication costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Advertisement (main public) |   |   | 10.000 |
| Advertisement (fishery sector) |   |   | 800 |
| Staff time |  20 |  70 | 1400 |
| Other administration costs |   |   |  |
| **Total estimate:**  |  |  | **12.200** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS:* *BG: 15.350 Euro**RO: 15.350 Euro* |
|  | *Overall uncertainty:* Green: Certain (>66% probability)The arrangement of events should be predictable. |
|  | *Scoring (size class):*

|  |  |
| --- | --- |
| **5** | **< € 50.000** |

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| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

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| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| Awareness raising that will lead to less marine litter in the sea. This will be for the benefit of the fishes, mammals and beaches |  1 | 1 | Improved marine environment by less marine litter  | 1 |

 |

## Measure 6

| MEASURE  | *Awareness building (educational campaign) of Local professional Fishery Groups regarding effective use of environmental friendly fishing techniques and equipment* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**6* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Costs for Capacity building events with LFG in Training centers* |
| **Assumptions**  | * One meeting between the countries to coordinate
* Communication material: 120 euro for 200 leaflets (BG)
* 4 stakeholder meetings will be held in each MS (one for each Fishery Local Action Group)
 |
| **Cost components** | * Costs for raising awareness (one off)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Preparation Stakeholder meeting | 16 | 70 | 1120 |
| Stakeholder meeting & follow up | 4 | 70 | 280 |
| Follow up |  10 | 70 | 700 |
| Meetings with neighbouring MS | 1 | 600 |  600 |
| Staff travel/accommodation | 1 | 750 |  750 |
| **Total implementation cost** |  |  | **3.450** |

* ation costs (one off)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Leaflets for fishermen |   |   | 120 |
| Staff time | 2 | 70 | 140 |
| Other administration costs |   |   | 140 |
| **Total estimate:**  |  |  |  **400** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS:* *BG: 3.850 Euro* *RO:3.850 Euro* |
|  | *Overall uncertainty:* Green: Certain (>66% probability)The measure is not very complex and therefor the activities easier to assess. |
|  | *Scoring (size class):*

|  |  |
| --- | --- |
| **5** | **< € 50.000** |

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| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| Education - few direct benefits (no improvement of the state of the environment) Benefits come if new techniques are introduced not by teaching about them. When introduced the fish stock will improve | 1 | 1 | Improved fish stock  | 1 |

 |

## Measure 7

| MEASURE  | Stimulation of environmental friendly practices for fishing vessels under 10 m length and not using towed gear | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**7* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Training of fishermen* |
| **Assumptions**  | * 4 training sessions (one for each Fishery Local Action Group)
* Training given by 1 public servant
* Training material (print outs, venue costs): 100€ per sessions
 |
| **Cost components** | * Training costs (one off)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Preparation | 9 | 70 | 630 |
| Training material (courses) |  |  | 400 |
| Giving training  | 4 | 70 | 280 |
| Follow up | 2 | 70 | 140 |
| **Total estimate:**  |  |  | **1.450** |

 |
| **Operational action 2** | *Setting up test pilots* |
| **Assumptions**  | * trap net with pingers is selected as environmental. friendly fishing technique
* each pinger costs 100 €/pc, each trap net requires 4 pingers (= 400€)
* in each port, 5 vessels will be supplied with a trap net & pingers (= 2000€)
* pilot test will be organised in 3 ports per MS (= 6000€)
* no operational costs are assumed
 |
| **Cost components** | * Technical implementation costs

|  |  |
| --- | --- |
| **Actions required**  | **Estimated one-off cost, €** |
| Investment costs | 6.000 |
| Operational costs |   |
| Maintenance costs |   |
| **Total cost** | **6.000** |

 |
| **Operational action 3** | *Evaluation of pilot test, incl. stakeholder meeting between small scale and large scale vessels & information leaflet* |
| **Assumptions**  | * *Communication material: 120 euro for 200 leaflets (BG)*
* *4 stakeholder meetings will be held in each MS (one for each Fishery Local Action Group)*
* *1 meeting between BG & RO to evaluate the pilot test & discuss the way forward*
 |
| **Cost components** | * Costs for assistance with voluntary agreements (one off)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Evaluation & preparation Stakeholder meeting | 16 | 70 | 1120 |
| Stakeholder meeting & follow up | 4 | 70 | 280 |
| Meetings with neighboring MS | 1 | 600 |  600 |
| Staff travel/accommodation | 1 | 750 |  750 |
| **Total implementation cost** |  |  | **2.750** |

* Communication costs (one off)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Leaflets for fishermen |   |   | 120 |
| Staff time | 2 | 70 | 140 |
| Other administration costs |   |   | 140 |
| **Total estimate:**  |  |  |  **400** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS: 10.600 Euro* |
|  | *Overall uncertainty:* Green: Certain (>66% probability) |
|  | *Scoring (size class):*

|  |  |
| --- | --- |
| **5** | **< € 50.000** |

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|  |  |
| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| **Education - raising awareness**Few direct benefits (no improvement of the state of the environment in the short run). Benefits require that new practices are introduced and the fish stock will then improve in the intermediate to long term |  3 | 3 | Improved marine fish stock & sustainable fishing can be achieved  | 3 |

 |

## Measure 8

| MEASURE  | *Designation of zones permitted for beam trawling and long-term observation of the impacts. When necessary, change usage requirements for beam trawling.* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**8* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *1) Implementation of beam trawling zones (one off)* |
| **Assumptions**  | * two meetings between BG & RO - one upfront to organise and one after the research have been carried out to agree on areas to designate
 |
| **Cost components** | * Implementation costs for a law, regulation, …

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required**  | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Preparation (Planning, writing) Consultation, Finalisation | 200 | 70 | 14.000 |
| Meetings with neighbouring MS | 2 | 600 | 1.200 |
| Staff travel/accommodation | 2 | 750 | 1.500 |
| **Total implementation cost** |  |  | **16.700** |

 |
| **Operational action 2** | *Training of control staff (one off)* |
| **Assumptions**  | * One day of training at 3 ports
* Training material (print outs, venue costs): 100€ per sessions
 |
| **Cost components** | * Training cost

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Preparation | 5 | 70 |  350 |
| Training material  |  |  | 300 |
| Giving training  | 3 | 70 |  210 |
| Follow up  | 2 | 70 |  140 |
| **Total estimate:**  |  |  | **1.000** |

 |
| **Operational action 3** | *Additional Staff control* |
| **Assumptions**  | * BG: Costs for increasing of the number of the control staff (inspectors) of Maritime administration (minimum 0,5 person in Varna and 0,5 person in Burgas)
* RO: same assumptions
 |
| **Cost components** | * Estimated FTE cost

|  |  |  |
| --- | --- | --- |
| **Actions required**  | **Estimated one-off cost, €** | **Estimated cost per year (€)** |
| Extra police officers  |  | 12.000 |
| **Total personnel cost** |  | **12.000** |
| ***Discounted to one off costs*** |  | ***63.000*** |

 |
| **Operational action 4** | *Operational costs for control (fuel, material, boat, ...)* |
| **Assumptions**  | * Dependent on number of assigned zones for beam trawling
* Inspection via Vessel Monitoring System is assumed to be included in current surveillance activities
* 6 aerial controls per year
* Prosecution costs cannot be determined ex ante
 |
| **Cost components** | * Enforcement costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of controls/yr** | **Estimated cost per control (€)** | **Estimated cost per year (€)** |
| Aerial surveillance  | 6 | 4000 [[2]](#footnote-2) | 24.000 |
| Investigations/prosecutions  | n.a. | n.a. | n.a.  |
| **Total surveillance cost** |  |  | **24.000** |
| ***Discounted to one off costs:*** |  |  | ***125.000*** |

 |
| **Operational action 5** | *Research on the activities* |
| **Assumptions**  | As the scope of the research is not defined yet, an estimation of research costs is not straightforward. * Study project of 2 years
* Costs of similar research projects: 100.000 €
 |
| **Cost components** | * Estimated research cost

|  |  |  |
| --- | --- | --- |
| **Actions required**  | **Estimated one-off cost, €** | **Estimated cost per year (€)** |
| 2 year research programme | 100.000 |  |
| **Total cost** | **100.000** |  |

 |
| **Operational action 6** | *Potential change of usage requirements for fishery sector* |
| **Assumptions**  | * No investments needed (within planning cycle of 6 years)
* Loss of added value:
	+ Short term (6 years): loss of fishing landings due to limited area for beam trawling
	+ Long term: benefits due to increase in sustainable yield.
* Not possible to determine sectoral costs in advance
 |
| **Cost components** | * *Sector cost (fishery sector)*

|  |  |  |
| --- | --- | --- |
| **Actions required**  | **Estimated one-off cost, €** | **Estimated cost per year (€)** |
| Investment costs | / |   |
| Operational costs |  | / |
| Loss of added value |  | Less fish/shelfish caught |
| Loss of employment |  | ?  |
| **Total cost** | / | **?**  |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS:* ***minimal 305.700 €, but probably > 1 million €[[3]](#footnote-3)*** |
|  | *Overall uncertainty:* Uncertain (<33% probability)Due to impossibility to estimate loss of added value for the fishery sector, prosecution costs and budget for research activities. |
|  | *Scoring (size class):* *Not possible to assess due to uncertainty (see above)* |

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| PART II | *Benefit assessment* |
| **Scoring** |

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| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| **Less beam trawling.** Improved knowledgeRegulation of permit regime - (today fishing vessels that come second loose out)Reduced sediment in water column improved water quality at beaches and improved catch for other types of fisheriesReduced resuspension of nutrients |  5 | 3 | Improved marine environment. The seabed habitat will improve significantly. The water quality will improve through less sediment.  | 5 |

 |

## Measure 9

| MEASURE  | *Promotion and stimulation (including financial) of environmental friendly fishing and collection of shellfish* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**9* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Public awareness* |
| **Assumptions**  | * Communication material: 120 euro for 200 leaflets (BG)
* Focus on promotion of environmental friendly collection (not yet on subsidies)
* 4 stakeholder meetings will be held in each MS (one for each Fishery Local Action Group)
 |
| **Cost components** | * Costs for raising awareness (one off)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Evaluation & preparation Stakeholder meeting | 16 | 70 | 1120 |
| Stakeholder meeting & follow up | 4 | 70 | 280 |
| **Total implementation cost** |  |  | **1.400** |

* Communication costs (one off)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Leaflets for fishermen |   |   | 120 |
| Staff time | 2 | 70 | 140 |
| Other administration costs |   |   | 140 |
| **Total estimate:**  |  |  |  **400** |

 |
| **Operational action 2** | *Define stimuli system (incl. discussion document with fisheries/processing/export sectors)* |
| **Assumptions**  | * /
 |
| **Cost components** | * Costs for assistance with voluntary agreements (one off)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Planning & preparation | 20 | 70 | 1.400 |
| Drafting discussion document | 35 | 70 | 2450 |
| Develop stimuli system  | 75 | 70 | 5250 |
| Meetings with neighbouring MS | 2 | 600 | 1.200 |
| Staff travel/accommodation | 2 | 750 | 1.500 |
| **Total implementation cost** |  |  | **11.800** |

 |
| **Operational action 3** | *Elaboration of (financial) stimuli system"* |
| **Assumptions**  | * Costs of similar subsidy systems: input MS needed
 |
| **Cost components** | * Costs of economic instruments

|  |  |  |
| --- | --- | --- |
| **Actions required**  | **Estimated one-off cost, €** | **Estimated yearly costs, €** |
| Investment costs | n.a.  |  |
| Operational costs: subsidies to fishermen |   | n.a. |
| Administration costs |   | n.a. |
| **Total cost** | **n.a.**  | **n.a.** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS: Not possible to assess (preparation: 13.600 €, probably € 50.000-200.000) (BG)* *Not possible to assess (preparation: 13.600 €, probably € < 50.000) (RO )* |
|  | *Overall uncertainty:* Red: Uncertain (<33% probability)The scope of the subsidy system cannot be assessed in advance as being the subject of action 2 ‘Define stimuli system’.  |
|  | *Scoring (size class):* *BG:*

|  |  |
| --- | --- |
| **4** | **€ 50.000 - 200.000** |

*RO:*

|  |  |
| --- | --- |
| **5** | **< € 50.000** |

 |

## Measure 10

| MEASURE  | *Development of common multiannual management plan for targeted fish stocks* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**10* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Bilateral (BG/RO) WG & drafting of management plan* |
| **Assumptions**  | * /
 |
| **Cost components** | Costs for assistance with voluntary agreements (one off)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Planning & preparation | 20 | 70 | 1.400 |
| Drafting mgt plan & agreement | 75 | 70 | 5250 |
| Outsourced study  | 50 | 300 | 15000 |
| Meetings with neighbouring MS | 2 | 600 | 1.200 |
| Staff travel/accommodation | 2 | 750 | 1.500 |
| **Total implementation cost** |  |  | **24.350** |

* Management costs (yearly)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated cost per year €** |
| Staff time (preparation, follow up) | 10 | 70 | 700 |
| Meetings with neighbouring MS | 1 | 600 |  600 |
| Staff travel/accommodation | 1 | 750 |  750 |
| **Total estimate:**  |  |  | **2.050** |
| ***Discounted to one off costs*** |  |  | ***12.000*** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS: 34.350 Euro* |
|  | *Overall uncertainty:* Green: Certain (>66% probability) |
|  | *Scoring (size class):*

|  |  |
| --- | --- |
| **5** | **< € 50.000** |

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| PART II | *Benefit assessment* |
| **Scoring** |

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| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| **Mgt plans for fish stocks**No direct benefits from creation of management plans. The benefits will arise when the fish stock are managed commonly and allow the fishing the follow the principles of MSY | 3 | 1 | Contributes to achievement of MSY and sustainable fish stocks  | 1,7 |

 |

## Measure 11

| MEASURE  | *Control on use of turbot gillnets (material, mesh size and thickness)* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**11* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1****Operational action 2****Operational action 3** | *Training of control staff**Additional staff for control**Operational costs for control (fuel, material, boat, ...)"* |
| Similar to measure (5) Control of regulated activities within or near MPAs& measure (34) Enhanced control on discharges of sewage water from ships according to the requirements of MARPOL 73/78 (requirements of Annex 1) Reformulation needed - Targets: Reduce nutrients; reduce contaminants |

## Measure 12

| MEASURE  | *Define and re-evaluate spatio-temporal bans and closures for fish species - fish stocks* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**12* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Research to specify spatio-temporal stock assessments/needs* |
| **Assumptions**  | * 1 year research programme
* Unit costs from chapter 3 Cost assumptions
 |
| **Cost components** | * Research costs

|  |  |  |
| --- | --- | --- |
| **Actions required**  | **Estimated one off cost, €** | **Estimated cost per year, €** |
| 1 year research programme | 50.000 |  |
| **Total cost** | **50.000** |  |

 |
| **Operational action 2** | *Designation of spatio-temporal zones* |
| **Assumptions**  | * 2 working group meetings between MS – one upfront to agree on the data collection and scope of the research project – one after the result from the project have been received to agree on bans and closures.
 |
| **Cost components** | * Implementation costs for a law, regulation, …

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required**  | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Legislative preparatory work  | 100 | 70 | 7.000 |
| Sectoral and public consultations | 20 | 70 | 1.400 |
| Finalisation (Approval and sign-off, advertising) | 80 | 70 | 5.600 |
| Meetings with neighbouring MS | 2 | 600 | 1.200 |
| Staff travel/accommodation | 2 | 750 | 1.500 |
| **Total implementation cost** |  |  | **16.700** |

 |
| **Operational action 3** | *Operational cost for WG elaboration on spatio-temporal bans and closures for fish species"* |
| **Assumptions**  | * Common workgroup (min 1 / year)
 |
| **Cost components** | * Management costs (yearly)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated cost per year €** |
| Staff time (preparation, follow up) | 15 | 70 | 1050 |
| Meetings with neighboring MS | 1 | 600 |  600 |
| Staff travel/accommodation | 2 | 750 | 1.500 |
| **Total estimate:**  |  |  | **3.150** |
| ***Discounted to one off costs*** |  |  | ***12.000*** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS:* *BG: 78.700 Euro**RO: 78.700 Euro* |
|  | *Overall uncertainty:* Green: Certain (>66% probability) |
|  | *Scoring (size class):*

|  |  |
| --- | --- |
| **4** | **€ 50.000 - 200.000** |

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| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| MPA (spatio-temparal) fish species - sustainable fish stock Improved seabed and lining conditions for mammals and seabirds | 5 | 5 | General improvement of the marine enviroment | 5 |

 |

## Measure 13

| MEASURE  | *Protection of non-breeding seabird species Yelkouan Shearwater (Puffinus yelkouan) and European shag (Phalacrocorax aristotilis) in coastal, territorial waters and EEZ of BS countries.* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**13* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Research project elaboration* |
| **Assumptions**  | * 2 year research programme
* Unit costs from chapter 3 Cost assumptions
 |
| **Cost components** | * Research costs

|  |  |  |
| --- | --- | --- |
| **Actions required**  | **Estimated one off cost, €** | **Estimated cost per year, €** |
| 4 year research programme | 100.000 |  |
| **Total cost** | **100.000** | **€**  |

 |
| **Operational action 2** | *Designation of rest and feeding areas for further protection* |
| **Assumptions**  | * 2 working group meetings between MS – one upfront to agree on the data collection and scope of the research project -one after the result from the project have been received to agree on which are areas designated
 |
| **Cost components** | * Negotiation costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required**  | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Preparation (Planning, writing) Consultation, Finalisation | 200 | 70 | 14.000 |
| Meetings with neighbouring MS | 2 | 600 | 1.200 |
| Staff travel/accommodation | 2 | 750 | 1.500 |
| **Total implementation cost** |  |  | **16.700** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS:* *BG: 116.700 Euro**RO: 116.700 Euro* |
|  | *Overall uncertainty:* Green: Certain (>66% probability)The cost of the project are reliable. The challenge can be to agree on the areas to designate. |
|  | *Scoring (size class):* *BG + RO:*

|  |  |
| --- | --- |
| **4** | **€ 50.000 – 200.000** |

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| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

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| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| Knowledge - no direct benefits expected as this does not directly lead to changes in the state of the environment or conditions for the Yelkouan Shearwater. Can be considered as a first step towards protection measures. |  1 | 1 | Improved marine environment specifically the seabirds | 1 |

 |

## Measure 14

| MEASURE  | *Elaboration/update of management plans for MPAs according to requirements of the MSFD and including both national and common targets* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**14* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Costs on Mixed WG of management plan elaboration (public consultations)*  |
| **Assumptions**  | * 2 working group meetings.
 |
| **Cost components** | * Negotiation costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required**  | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Preparation (Planning, writing) Consultation, Finalisation | 200 | 70 | 14.000 |
| Meetings with neighbouring MS | 2 | 600 | 1.200 |
| Staff travel/accommodation | 2 | 750 | 1.500 |
| **Total implementation cost** |  |  | **16.700** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS:* *BG: 16.700 Euro**RO: 16.700 Euro* |
|  | *Overall uncertainty:* Yellow: Medium uncertainty(>33–66% probability)Uncertainty if two meetings will be sufficient for a full implementation of this measure |
|  | *Scoring (size class):* *BG:*

|  |  |
| --- | --- |
| **3** | **€ 200.000 - 500.000** |

*RO:*

|  |  |
| --- | --- |
| **4** | **€ 50.000 - 200.000** |

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| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| No benefits from creation of plans. Necessary to implement plans to get benefitsThe content of the plans will provide benefits to the marine environment with better conditions for the flora and fauna |  1 | 1 | Improved marine environment. Broadly on flora and fauna | 1 |

 |

## Measure 15 (part A)

| MEASURE  | *Creating a coherent and representative networks of marine protected areas that includes MPA's in both RO and BG, including management plans. Control of regulated activities within MPAs* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**15* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1****Operational action 2** | *Investigate current MPA distribution, coherence and representatively for combined BG/RO EEZ's and* Potentially designating new "missing" MPA's |
| **Assumptions**  | * Costs for similar research. It is assumed that the research project maps the existing MPA and relates their value to the Natura2000 requirement. Based on the assessment suggests will be made to which additional MPA's to designate in order to have a coherent MPA distribution.
* 1 year research programme
 |
| **Cost components** | * Research costs

|  |  |  |
| --- | --- | --- |
| **Actions required**  | **Estimated one off cost, €** | **Estimated cost per year, €** |
| 1 year research programme |  50.000 |  |
| **Total cost** | **50.000** | **€**  |

 |
| **Operational action 3** | *Drafting management plans (stepwise)* |
| **Assumptions**  | * working group meetings (three steps of two meetings)
 |
| **Cost components** | * Negotiation costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required**  | **Estimated nr of days / meetings** | **Estimated rate per day / meeting (€)** | **Estimated one-off cost per action, €** |
| Preparation (Planning, writing) Consultation, Finalisation | 600 | 70 | 42.000 |
| Meetings with neighbouring MS | 6 | 600 | 3.600 |
| Staff travel/accommodation | 6 | 750 | 4.500 |
| **Total implementation cost** |  |  | **51.100** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS:* *BG: 101.100 Euro* *RO:101.100 Euro* |
|  | *Overall uncertainty:* Yellow: Medium uncertainty(>33–66% probability)It will be challenging to create a coherent network that is of mutual interest. |
|  | *Scoring (size class):*

|  |  |
| --- | --- |
| **4** | **€ 50.000 - 200.000** |

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| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| No benefits from creation of plans. Implementation required. The benefits from a coherent network is likely to increase the benefits the effort can be better target where the challenges are. |  3 | 1 | Improved marine environment through a coherent network will be significant.  | 3 |

 |

|  |  |
| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analyzed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| **Regulations on activities within MPAs** Improved seabedImproved fish stocks Improved living conditions for mammalsImproved recreational value[[4]](#footnote-4) |  5 | 5 | Improved marine environment In general the marine flora and fauna will benefit from regulated MPA’s  | 5 |

 |

## Measure 15 – (part B)

| MEASURE  | *Control of regulated activities within or near MPAs* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**MSFD measure list* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1** | *Training of control staff*  |
| **Assumptions**  | * 1 day training in 3 ports,
* Training given by 1 public servant
* Training material (print outs, venue costs): 100€ per sessions
 |
| **Cost components** | • Training costs (one off)

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Preparation | 5 | 70 |  350 |
| Training material (courses) |  |  | 300 |
| Giving training  | 3 | 70 |  210 |
| Follow up | 2 | 70 |  140 |
| **Total estimate:**  |  |  | **1.000** |

 |
| **Operational action 2****Operational action 3** | *Additional staff for control* *Operational costs for control (fuel, material, boat, ...)*  |
| **Assumptions**  | * Traffic can be monitored via VMS Vessel Monitoring System (only for fishery vessels).
* Several vessels do not have VMS (e.g. gravel extraction)  to be controlled at the port
* 20 extra controls at sea per year are needed
 |
| **Cost components** | * Enforcement costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of controls/yr** | **Estimated cost per control (€)** | **Estimated cost per year (€)** |
| Surface surveillance  | 20 | 600[[5]](#footnote-5) | 12000 |
| Joint enforcement patrols with local officer | 20 | 60 | 1200 |
| Investigations/prosecutions  | n.a. | n.a. | 0 |
| **Total surveillance cost** |  |  | **13.200** |
| ***Discounted to one off costs:*** |  |  | ***70.000*** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS: 71.000 Euro* |
|  | *Overall uncertainty:* Green: Certain (>66% probability) |
|  | *Scoring (size class):*

|  |  |
| --- | --- |
| **4** | **€ 50.000 - 200.000** |

 |

|  |  |
| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analyzed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| --- | --- | --- | --- | --- |
| **Control within MPAs**Improved seabedImproved fish stocks Improved living conditions for mammalsImproved recreational value[[6]](#footnote-6)  |  5 | 5 | Improved marine environment In general the marine flora and fauna will benefit from regulated MPA’s | 5 |

 |

## Measure 16

| MEASURE  | *Setting up of a common action plan for early detection and mitigation and impact assessment of non-indigenous species.* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**16* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational actions** | 1. Additional staff + training
2. *Operational costs*
 |
| **Assumptions**  |  |
| **Cost components** | * Communication costs

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Additional staff for control |   |   | 96.000 |
| Training of control staff |   |   | 2.000 |
| **Total estimate:**  |  |  | **98.000** |

 |
| **Operational action 2** | *Operational costs* |
| **Assumptions**  |  |
| **Cost components** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Actions required** | **Estimated nr of days** | **Estimated rate per day (€)** | **Estimated one-off cost per action, €** |
| Operational costs |  |  | Not possible to assess |
|  |  |  |  |
| **Total estimate:**  |  |  | **n.a.** |

 |
| **Total cost of measure (6 years)** | *Total One-off cost within MSFD cycle (6years) per MS:* *RO: 98.000 Euro (minimum, probably < 200.000 euro)**BG: 98.000 Euro (minimum, probably < 200.000 euro)* |
|  | *Overall uncertainty:* Green: Certain (>66% probability)The arrangement of training should be predictable. |
|  | *Scoring (size class):*

|  |  |
| --- | --- |
| **4** | **€ 50.000 - 200.000** |

 |

|  |  |
| --- | --- |
| PART II | *Benefit assessment* |
| **Scoring** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Identify range of benefits** | **Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)**  | **Benefits over the analysed period (monetary if possible) (1 low 3 medium 5 high)** | **Qualitative description of benefits (if valuation is not possible)** | **Benefit estimate (weighted AVG of time scale score and benefit score)** |
| Implementation will lead to diminished rates of introduction of new species |  3 | 1 | Improved marine environment by less marine invasive species  | 2 |

 |

## Measure 17

| MEASURE  | *Amendment of existing legislation through Introduction of a permit regime for activities in marine territorial waters* | *Code:**MSFD reporting code* |
| --- | --- | --- |
|  | *Management area: Black Sea**Any other codes:* | *N° of measure:**MSFD measure list* |
| **PART I** | **Detailed cost assessment** |  |
| **Operational action 1****Operational action 2****Operational action 3** | *Legislative preparatory work**Sectoral and Public consultations**Legislative adaptations* |
| Similar to measure (4) Setting regulations on activities within MPAs or potentially affecting the MPA (No constructions and industrial activities, regulation of fishery activities, no motorsports (high speed boats),…) |

# Annexes

## Annex 1: relevant information relating to BWM Convention

A whole set of regulation is on its way and will be implemented in any case (independently of the MSFD measures). The implementation will also be required of BG and RO as members of IMO whether they have ratified or not. The implementation includes control measures - Port State control of ships foreign or national. It is probably the national maritime authorities that will be responsible for this. It appears to me that the present measure 23 needs to be dropped/reformulated. A new MSFD measure will have to be discussed in this light – maybe after a status from BG and RO regarding which authority is responsible and what the status is regarding implementation.

The following applies for the Ballast Water Convention:

UN international maritime organization (IMO) has adopted:

International Convention for the Control and Management of Ship’s Ballast Water and Sediments in 2004.

Task: Reduce the risk of new introduction of exotic species with ballast water.

US have adopted their own BW regulations.

Many national and regional regulations are already in place or are coming up.

They are mainly focussing on:

* Ballast water exchange requirements **(already in force)**
* Reporting of ballast water exchange procedures
* Record keeping for a period of 2 years
* Intention to implement ballast water treatment requirements with **stricter** standards.

Ballast water management convention **applies to all ships** greater than 400 gross tons.

**Entry into force**

* 12 months after 30 states representing 35% of the gross tonnage have ratified the convention (an up to 10 year transition period is expected)

**Today**

* 44 states have signed the convention. They are representing 32.86% of the world’s gross tonnage. Data correct as of 8th April, 2015

This means that the convention will likely enter into force by the end of 2016 (Italy is in the process of ratifying and will deliver the missing gross tannage).

Once the convention is in force all IMO states will have to comply with regards to international traffic.

**Control**

Control is carried out by the Port State via on-site spot tests typically targeted at the statistically documented "bad guys". The IMO rules must be followed. The Port State ca refuse to admit ships that do not comply with the rules. Test of BW Management plans, BW Handling plans, BW Exchange documentation, Certification documentation, interview of relevant crew members, check of BW equipment and tanks. A lot of this control (Port State control) is already agreed and takes place. BW discharge control has not been agreed yet.

1. One off costs doesn’t need to be discounted are they are assumed to be spend in the first year of the planning period [↑](#footnote-ref-1)
2. 1000€/h x 4 hours of aerial surveillance, including staff [↑](#footnote-ref-2)
3. Due to high estimated sectoral costs [↑](#footnote-ref-3)
4. e.g. sailing activities and fishing as well as watching mammals and birds [↑](#footnote-ref-4)
5. 150€/h ship in shallow hours for 4 hours [↑](#footnote-ref-5)
6. e.g. sailing activities and fishing as well as watching mammals and birds [↑](#footnote-ref-6)